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Final Alignment Study

Pecos Road

Recker Road to Sossaman Road

Contract No. 1998-33
Task No. K

Prepared for:

Maricopa County
Department of Transportation

March 2001

Submitted by:

AMEC Infrastructure, Inc.
(formerly AGRA Infrastructure, Inc.)

FINAL
PECOS ROAD
ALIGNMENT STUDY

RECKER ROAD TO SOSSAMAN ROAD

MCDOT CONTRACT NO. 1998-33
Task No. K

March 2001

Prepared for
MARICOPA COUNTY
DEPARTMENT OF TRANSPORTATION

Prepared by
AMEC Infrastructure Inc.
4435 E. Holmes Avenue
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1.0 EXECUTIVE SUMMARY

1.1 General

With the increased land development and the resulting increased traffic demands, it became necessary to consider options for the future alignment of Pecos Road from Recker Road to Sossaman Road. As features were identified that would influence the Pecos Road alignment, it became apparent that the ultimate alignment of Rittenhouse Road would also need to be considered. Therefore, due to the number of issues raised, and the number of governmental agencies and private entities involved, a separate alignment study for Pecos Road and Rittenhouse Road would need to be completed. The purpose of this study is to develop and evaluate several alignment alternatives for Pecos Road and Rittenhouse Road, and recommend a preferred alignment.

As a result of input from the local municipalities of Gilbert, Mesa, and Queen Creek, Pecos Road will be a 6-lane facility with raised median and 39.62m (130') of right-of-way both east and west of Power Road. Rittenhouse Road will also be a 4-lane facility with 33.53m (110') of right-of-way east of Power Road but will be eliminated west of Power Road.

Very little right-of-way exists within the study area. There is some right-of-way along the Pecos Road section line west of Power Road and along the existing Rittenhouse Road alignment. Due to the lack of available right-of-way, right-of-way impacts and costs will be significant.

Several alignment alternatives were considered for both Pecos Road and Rittenhouse Road. Since each Rittenhouse Road alignment was closely associated with a Pecos Road alignment, the alternatives were grouped into three general alignment alternatives. These alternatives include the following:

Alignment 1	Closely follows the Pecos Rd section line
Alignment 2	Uses the existing railroad crossing
Alignment 3	Crosses Power Rd at the mid-section line north of Germann Rd

Refer to the Conceptual Alignment Maps in Appendix A.

Each of the alignment alternatives was evaluated based on roadway geometrics, utility impacts, property impacts, and overall cost. In addition, several critical characteristics were identified which might be significant enough to eliminate an alternative from consideration. These critical

characteristics include offset intersections, a new grade-separated railroad crossing, and Power Ranch development impacts. Of the alignments considered Alignment 2 had the best roadway geometrics, the fewest utility impacts, and the fewest number of critical characteristics. Alignment 2 is the recommended alignment alternative.

TABLE 1.1

RECOMMENDED ALTERNATIVE SUMMARY

Segment	Alignment Alternative	Estimated Cost
Pecos Rd west of Power Rd	Alt #2 – 6 lanes	$6,780,000
Pecos Rd east of Power Rd	Alt #2 – 6 lanes	$5,506,000
Rittenhouse Rd	Alt #2 – 4 lanes	$5,826,000
	TOTAL =	**$18,112,000**

2.0 INTRODUCTION

2.1 Background

Pecos Road runs west from Recker Road and east from Ellsworth Road. Between these two roadway termini are portions of the Town of Gilbert, the City of Mesa and Unincorporated Maricopa County. This study encompasses the area between Recker Road and Sossaman Road, a distance of approximately two miles.

During the development of the *Power Road Access Control & Corridor Improvement Study* several issues came forward regarding the ultimate alignment of Pecos Road between Recker Road and Sossaman Road. In addition, it became apparent that the ultimate alignment of Rittenhouse Road would greatly influence the Pecos Road alignment. Therefore, it was determined due to the number of issues raised, and the number of governmental agencies and private entities involved, that a separate alignment study for Pecos Road and Rittenhouse Road would need to be made. The purpose of this study is to develop and evaluate several alignment alternatives for Pecos Road and Rittenhouse Road, and recommend a preferred alignment.

2.2 Existing Characteristics of the Corridor

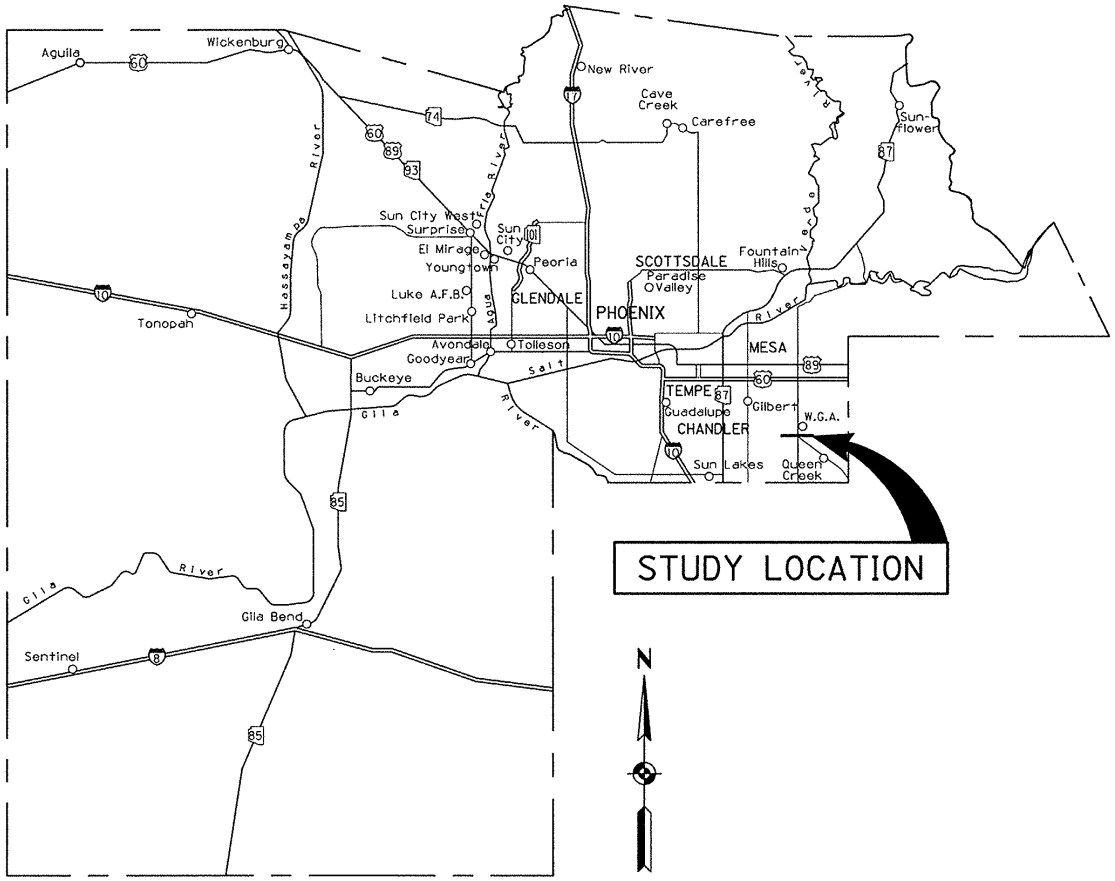
2.2.1 Topography

The study region is located in the far southeast corner of Maricopa County (see Project Location Map, Figure 2.1). In this area, Pecos Road passes over the Roosevelt Water Conservation District (RWCD) Canal, the East Maricopa Floodway (EMF), the Union Pacific Railroad (UPRR), and the Rittenhouse Channel. The RWCD Canal and the EMF run parallel to each other and lie just east of Recker Road. The UPRR and the Rittenhouse Channel also parallel each other and cross the area at Power Road on a southeast – northwest diagonal. Rittenhouse Road parallels the UPRR.

Flat irrigated fields and virgin desert characterize the surrounding land. Along with the areas of open land, there are several homes, small businesses, and an abandoned landfill in the area.

MARICOPA COUNTY

Not to Scale



MARICOPA COUNTY 1871 ARIZONA

FIGURE 2.1
PROJECT LOCATION MAP

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2.2.2 Local Municipalities

There are three incorporated communities within the study area. The Town of Queen Creek lies east of Power Road and south of Rittenhouse Road and Germann Road (see City and Town Limits Maps, Appendix D). The City of Mesa lies east of Power Road and North of Rittenhouse Road and Germann Road. The Town of Gilbert is on the west side of Power Road. The majority of the study area within these municipalities is rural in nature with the exception of the area surrounding the Williams Gateway Airport (WGA). This area includes an airport, and satellite campuses of Arizona State University (ASU), Mesa Community College and Chandler-Gilbert Community College.

2.2.3 Existing Right-of-Way

Very little right-of-way currently exists for Pecos Road. A right-of-way strip 20.12m (66') wide has been allocated along the Pecos Road section line between Recker Road and Power Road. Rittenhouse Road has right-of-way that varies between 24.38m (80') and 18.24m (60') along its entire course.

2.2.4 Existing Utilities

The following utility companies were contacted and facility maps requested:

- City of Mesa
- Queen Creek Water Co
- Town of Gilbert
- Salt River Project
- US West
- RWCD
- Cox Communications
- Southwest Gas
- APS
- Santa Fe Pipelines (Kinder-Morgan)
- Union Pacific Railroad
- MCI
- AT&T
- Quest Communications

Facility maps received from the above utility companies were reviewed and the utilities drafted into their approximate locations.

There are also a large number of buried utilities in the area. Underground telephone lines run along the Pecos Rd section line east of Power Road. MCI has fiber optic cables running along the Union Pacific Railroad tracks and within railroad right-of-way. Gas lines

from both the City of Mesa and Southwest Gas lie along the section and mid-section lines throughout the area. Transmission lines run along the western bank of the EMF.

The City of Mesa has completed the installation of sewer lines and lift station. The sewer line runs south between Pecos Road and Germann Road at which point it turns west and essentially follows the Germann Road section line. The lift station is located on the southeast corner of the Power and Pecos Road intersection.

2.2.5 Existing Land Use

Existing land uses within the study area consist of agricultural, residential, commercial, public/quasi-public, and undeveloped. Agricultural land uses are currently along Pecos Road and Rittenhouse Road at several locations throughout the study. Residential uses are generally near the south portion of Rittenhouse Road and are single family dwellings. Williams Gateway Airport (WGA) is classified as an Industrial Facility District. In addition to WGA is the Williams Campus that is used by a consortium of state, community, and aviation-related colleges and is classified as a Public Facilities District.

2.2.6 Zoning

Zoning classifications within the study area include various agricultural, residential, and commercial designations in Mesa, Gilbert, Queen Creek, and Maricopa County. The WGA's Airport Overflight Area (AOA) is an area surrounding the airport property. Maricopa County designated this area as an Airport District (AD) with aircraft noise and crash potential impacts.

The General Plans for Mesa, Gilbert, and Queen Creek indicate urban and industrial development within the area. Zoning changes within these jurisdictions can occur when development requires incorporation or a planning change in the municipality. The general industrial and commerce park zoning classifications are to be located in the AD. Future zoning in Gilbert's General Plan changes existing agricultural and undeveloped classifications on study area lands, currently in Maricopa County, to multi-use commercial and multi-use employment zones. The Queen Creek General Plan provides for land north of Germann Road along Power Road, currently zoned residential, to be zoned for commercial and light industrial uses.

2.2.7 Planned Land Use

Planned land uses within the study area were identified from adopted Mesa, Gilbert, and Queen Creek General Plans and planning documents. Interviews with municipal planning department personnel were also conducted to include the most current proposals for development within the study region. Planned land uses include commercial, industrial, residential, schools, parks/open space, and vacant/undeveloped.

In general, there are four major planned land uses that will most significantly affect traffic volumes. These four comprise the planned area development (PAD), Power Ranch, between Power Road and the EMF, the industrial improvement district south of WGA and east of Sossaman Road, WGA/ASU, and the new high school on the northeast corner of Recker Road and Pecos Road.

2.2.8 Recreational Trails

Recreational trails are becoming a popular public facility within the local jurisdictions. Within the alignment study area, the only trail currently proposed lies within the EMF and would serve primarily equestrian activities.

2.2.9 Environmental Overview Summary

Reviewing the United States Fish and Wildlife Service list of endangered, threatened, or candidate species shows that there are no listed species present within the study corridor. Additionally, there are no designated critical habitats within the study area limits.

Hazardous material sites within the study area include a closed solid waste landfill on land currently owned by the Air Force but will be slated under the Gila River Indian Community ownership upon transfer. Additional efforts will be required in the future to determine if these issues will impact project specific designs.

2.2.10 Archaeological Assessment Summary

At this time, the only known cultural resource is an archaeological site identified by the Air Force that lies between Sossaman Road and the landfill. Alignment 1 passes directly through the recorded archeological site. The site name and number are “Southwest Germann”, AZU:10:20. Arizona State University conducted the survey. The Historic

Government Land Office (GLO) plats, which are on file with the Bureau of Land Management (BLM), show several additional archaeological features and properties in the study area. The discovery of the remains of some of these properties is possible during future archaeological surveys.

3.0 TRAFFIC DATA

3.1 General

The following subsections summarize the capacity analyses for the existing traffic volumes and existing conditions that are contained in the Traffic Analysis Report, which was prepared for the Power Road Corridor Improvement Study.

3.2 Existing Level of Service

3.2.1 Current ADT's

Since Pecos Road currently does not exist in the study area, the only current ADT's are for Power Road and Rittenhouse Road. Power Road has an ADT of 6,200 vpd south of Rittenhouse Road and 7,800 vpd north of Rittenhouse Road. Rittenhouse Road has an ADT of 5,400 vpd west of Power Road and 7,600 vpd east of Power Road. The current 24-hour volumes were used to conduct the existing level of service (LOS) analyses for the segments on Power Road. Current peak hour turning movements were also collected and are used in the intersection LOS calculations.

3.2.2 Intersections

The only existing intersection at Power Road and Rittenhouse Road operates at a LOS of "B" for both the AM and PM peak hours.

3.3 Future Traffic Volumes and Roadway Laneage

3.3.1 Year 2010 and 2020 Volume Predictions

The following Average Daily Traffic (ADT) volumes (vpd) were developed:

Segment	Year 2010	Year 2020
Power Rd south of Rittenhouse Rd	13,800	28,300
Power Rd north of Rittenhouse Rd	17,300	35,600
Rittenhouse Rd west of Power Rd	12,000	24,700
Rittenhouse Rd east of Power Rd	16,900	34,700
Pecos Rd west of Power Rd	3,400	9,600
Pecos Rd east of Power Rd	4,400	11,600

3.3.2 Future Roadway Laneage

The traffic volumes shown above were not used to develop future roadway laneage requirements and are intended to be informational only. The laneages were set by the local jurisdictions. Pecos Road will be a 6-lane roadway with a raised median west and east of Power Road. Rittenhouse Road will be a 4-lane facility. Power Road will be a 6-lane roadway with a raised median.

4.0 MAJOR DESIGN FEATURES

4.1 Design Criteria for Pecos Road

The criteria used in the development of this study are listed in Table 4.1 and described in greater detail later in this section.

TABLE 4.1
DESIGN CRITERIA

DESIGN CRITERIA	PECOS ROAD		RITTENHOUSE ROAD
	WEST OF POWER ROAD	EAST OF POWER ROAD	
Functional Classification	Urban Principal Arterial	Urban Principal Arterial	Urban Minor Arterial
Design Year	2020	2020	2020
Design Vehicle	WB-15 (WB-50)	WB-15 (WB-50)	WB-15 (WB-50)
Design Speed	90 km/h (55 mph)	90 km/h (55 mph)	80 km/h (50 mph)
Number of Lanes	N = 6	N = 6	N = 4
Maximum Superelevation	$e_{max} = 0.04$	$e_{max} = 0.04$	$e_{max} = 0.04$
Minimum PI Angle (w/o Horizontal Curve)	45 minutes	45 minutes	45 minutes
Minimum Angle of Intersection	80 degrees	80 degrees	80 degrees
Minimum Intersection Approach Tangent	110m (330')	110m (330')	110m (330')
Cross Slope	2.5%	2.0%	2.0%
Right-of-Way	Width = 39.6m (130 feet) minimum	Width = 39.6m (130 feet) minimum	Width = 33.5m (110 feet) minimum

4.1.1 Functional Classification

Functional Classification is the process by which urban and rural roadways are grouped into classes or systems according to the type of service they provide to the traveling public. The general classifications are arterial, collector, and local. These are further categorized into rural or urban, and principal, major, or minor.

Pecos Road has been classified as Urban Principal Arterial both east and west of Power Road. Rittenhouse Road has been classified as Urban Minor Arterial.

4.1.2 Design Year/Design Vehicle/Design Speed

The design year for determining future traffic volumes and hence the type of roadway is generally 20 to 25 years from the start of the design process and is rounded to the nearest 5-year increment. The design year for this study is 2020.

The design vehicle is the largest vehicle that is most likely to use the roadway with some frequency. The design vehicle will have an affect on the radii of the returns at intersecting roadways. The design vehicle used in this study was WB-15 (WB-50).

The choice of a design speed is generally determined by the classification of the street and the characteristic of the terrain. The design speeds used for this study were obtained from the local jurisdictions.

4.1.3 Town of Gilbert Typical Section

The Town of Gilbert typical section that fits the Urban Principal Arterial classification is the “Major Arterial” section (see Figure 4.2). Features of this typical section include a 6-lane roadway with bike lanes, a raised median, and 39.6m (130’) of right-of-way. This typical section is used for estimating purposes only and may be modified later in design.

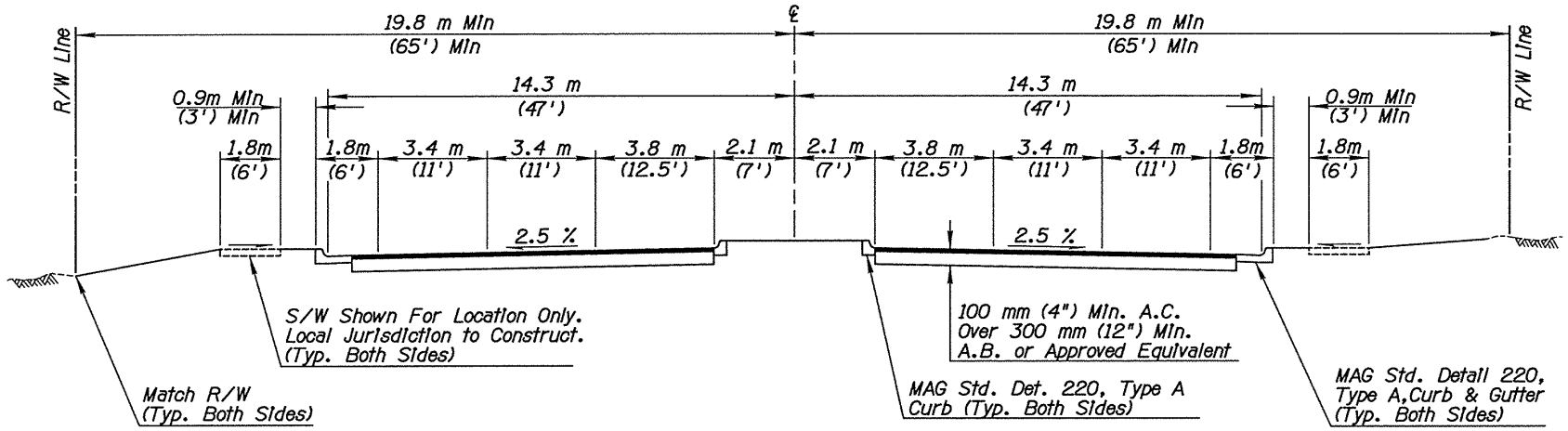
4.1.4 City of Mesa Typical Section

The City of Mesa typical section is a 6-lane roadway and will be used east of Power Road (see Figure 4.3). This section has a raised median, bike lanes, and 39.6m (130’) of right-of-way. Again, this typical section is used for estimating purposes only and may be modified later in design.

4.1.5 Rittenhouse Road Typical Section

The typical section for Rittenhouse Road will be a 4-lane section with bike lanes and only 33.5m (110') of right-of-way (see Figure 4.4).

TOWN OF GILBERT MAJOR ARTERIAL TYPICAL SECTION



N.T.S.

MARICOPA COUNTY
DEPARTMENT OF TRANSPORTATION
ENGINEERING DIVISION

PECOS ROAD
RECKER ROAD TO SOSSAMAN ROAD
CONTRACT NO. 1998-33 TASK: K

	BY	DATE
DESIGNED	E. Williams	1/01
DRAWN	E. Williams	1/01
CHECKED	V. Bennett	1/01

PRELIMINARY
NOT FOR
CONSTRUCTION

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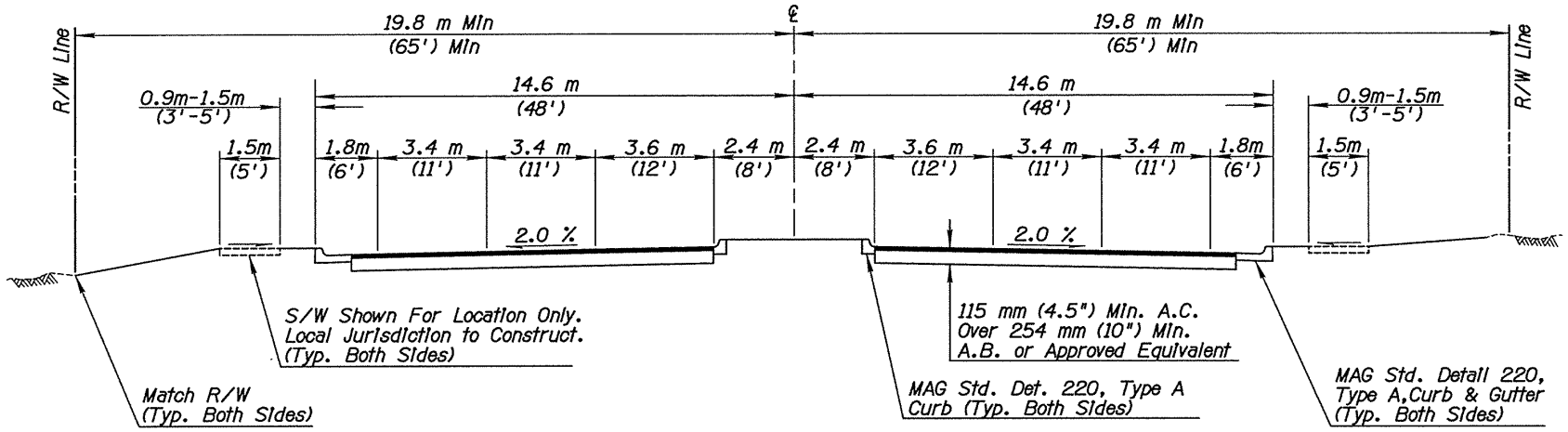
Figure 4.1

SHEET OF 1 3

TRACS NO

CITY OF MESA MAJOR ARTERIAL TYPICAL SECTION



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PECOS ROAD
RECKER ROAD TO SOSSAMAN ROAD
CONTRACT NO. 1998-33 TASK: K

		BY	DATE
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	DRAWN	E. Williams	1/01
	CHECKED	V. Bennett	1/01

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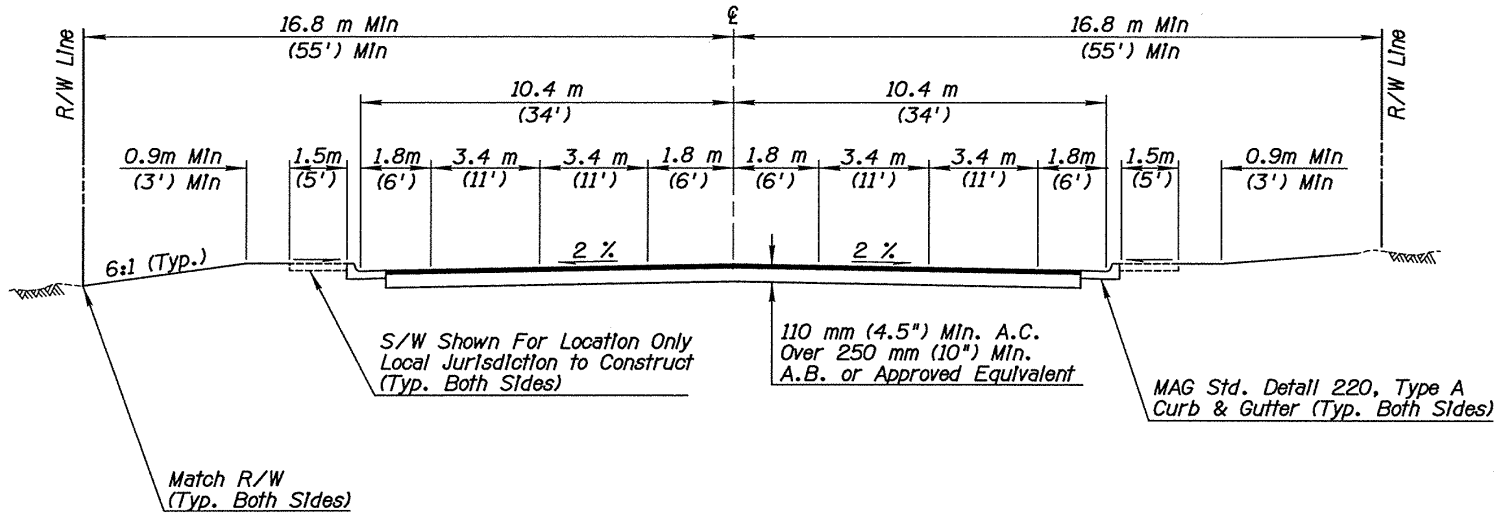
Figure 4.2

SHEET 2 OF 3

TRACS NO

RITTENHOUSE ROAD
TYPICAL SECTION



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MARICOPA COUNTY DEPARTMENT OF TRANSPORTATION ENGINEERING DIVISION			
PECOS ROAD RECKER ROAD TO SOSSAMAN ROAD CONTRACT NO. 1998-33 TASK: K			
PRELIMINARY NOT FOR CONSTRUCTION		BY	DATE
	DESIGNED	E. Williams	1/01
	DRAWN	E. Williams	1/01
	CHECKED	V. Bennett	1/01
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Figure 4.3			SHEET OF 3 3

TRACS NO

4.1.6 Horizontal Alignment

There is no MCDOT or AASHTO specification for the minimum angle break (P.I.) with out using a horizontal curve. Following a review of ADOT and City of Phoenix design criteria, together with consultation with MCDOT, it was determined that a P.I. greater than 45 minutes will require a horizontal curve.

Maximum superelevation rates to be used are those prescribed on page 5-25 of the MCDOT Roadway Design Manual. Due to the urban conditions, the maximum superelevation rate will be 4%. Runoff lengths should be 60 to 80 percent outside the curve. Reverse curves should have tangent lengths between them equal to the sum of their combined superelevation runoff and runout lengths.

4.1.7 Vertical Alignment

The vertical alignment will follow the existing ground as much as possible. The minimum profile grade will be 0.25% as required on page 5-39 of the MCDOT Roadway Design Manual. Algebraic differences in grade of more than 0.3% will require the use of vertical curves. The minimum curve length for vertical curves will be 61 m or 60% of the design speed (200 ft or 300%), which ever is greater. The above listed criteria meet or exceed those of the local jurisdictions.

4.2 Design Criteria for Power Road

The ultimate functional classification of Power Road is Urban Principal Arterial. Power Road will follow the design criteria established in the *Power Road Access Control and Corridor Improvement Study*. In general, the only differences between the Power Road criteria and that specified for Pecos Road above, is that the design speed is increased to 100 kph (60 mph) and the right-of-way is 42.7m (140').

4.3 Drainage

The drainage concept is based on hydrology provided by the Flood Control District of Maricopa County (FCDMC) and the Drainage Design Manual for Maricopa County, Volumes I-III.

The flood plains in the corridor tend to follow primarily man-made drainage channels. FEMA flood classifications of “A”, “AE”, or “AH” lie on the east and south sides of the Rittenhouse Channel and the EMF.

Constructed channels and box culverts are also necessary to handle the 50-yr storm flows. New Box culverts will be constructed underneath Pecos Road at the Rittenhouse channel.

4.4 Utilities

A number of different utilities are present within and adjacent to the existing Power Road corridor. Utilities and private irrigation facilities, currently outside the existing right-of-way, that will be impacted by the acquisition of additional right-of-way will be relocated outside the proposed right-of-way but as close as possible to the new right-of-way line. Other conflicting utilities within the existing right-of-way will be relocated as close as possible to the proposed right-of-way line. A search of “prior rights” and very close coordination with the utility companies during the design phase activities will be required. For the purpose of this study, it is assumed the utilities have “prior rights” and the local jurisdiction will assume the cost to relocate the utilities.

4.5 Railroad Crossings

A new or modified railroad crossing will be required as part of the new Pecos Road alignment. The UPRR was been contacted relative to the developed alignment alternatives. The UPRR responded in a letter dated March 2, 2001, that they would be opposed to any new crossing as part of the Pecos Road improvements. As such, the alignments that will require a grade-separation and their corresponding estimates have been developed accordingly.

4.6 Structures

New drainage culverts will be constructed to meet the ultimate roadway cross section.

All bridge structures should be constructed to the ultimate roadway width. EMF Bridges should be designed to allow for equestrian trails to be located in the channel. Railroad crossing bridges should be designed to provide the necessary railroad clearances.

5.0 ALTERNATIVES

5.1 General Discussion

This section will evaluate several alignment alternatives for both Pecos Road and Rittenhouse Road. For Pecos Road three alignments have been considered. The alignments include one approximately centered on the Pecos Road section line, one that crosses the EMF nearly perpendicular and passes through the intersection of Power Road and the UPRR tracks, and one that crosses the EMF nearly perpendicular and intersects Power Road at the mid-section line between Germann Road and Pecos Road.

For Rittenhouse Road three alignments were also considered. Each of these alignments will eliminate Rittenhouse Road west of Power Road as desired by the Town of Gilbert.

Each alignment is evaluated based on the right-if-way requirements specified previously.

5.2 Alignment 1

5.2.1 Pecos Road Alignment Description

Alignment 1 essentially follows the Pecos Road section line from Recker Road to Sossaman Road (see Figure 5.1 and Conceptual Alignment Maps, Appendix A). This alignment only deviates from the section line as it passes by the existing landfill. In this location the alignment is shifted to the north by means of a 45-minute PI located in the Power Road intersection. The intent of this shift is to avoid some of the potential conflicts associated with the hazardous materials site and the property owned by the Gila River Indian Community (located immediately east of the landfill).

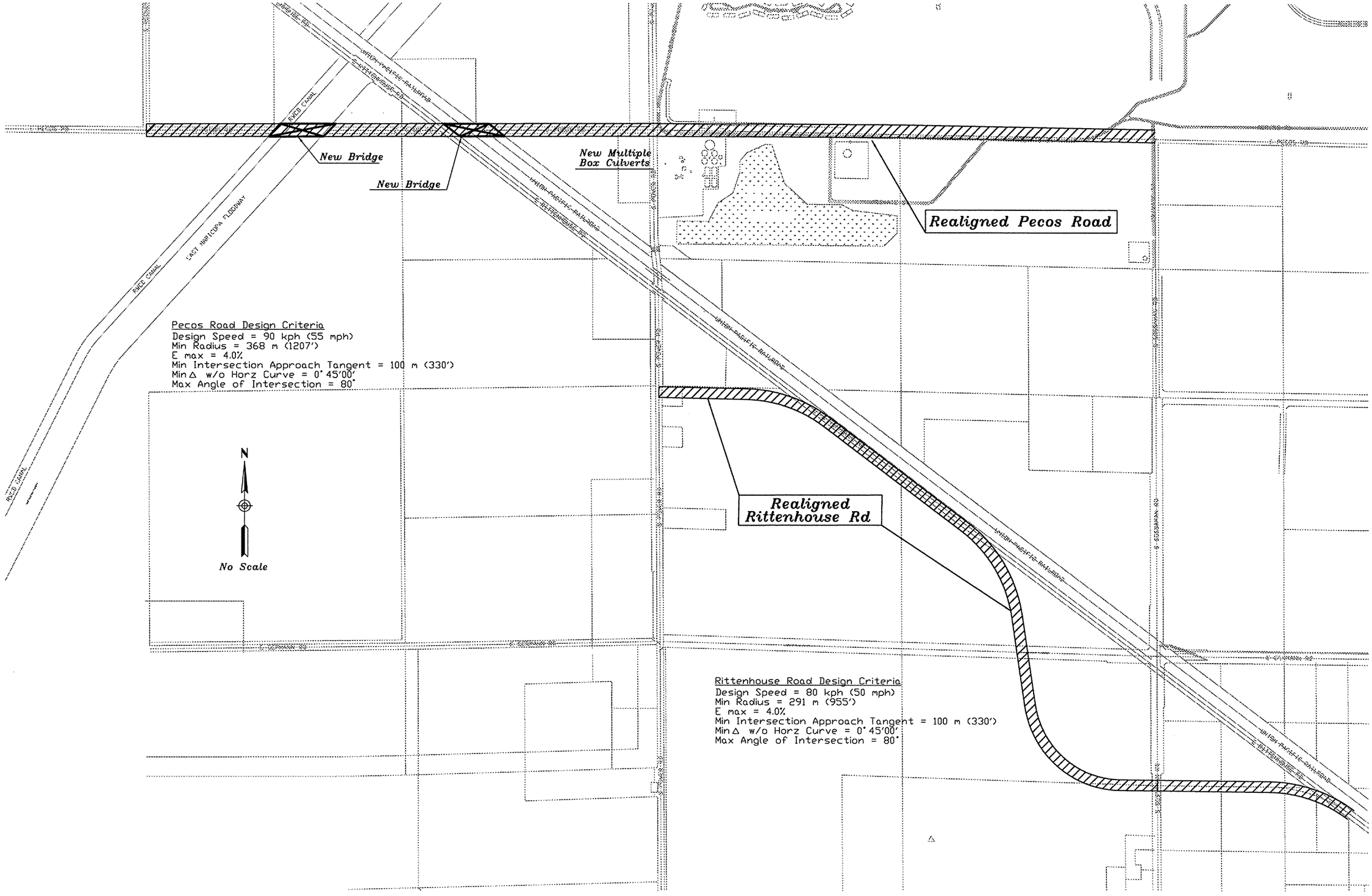
This alignment includes an offset intersection at Sossaman Road. This is necessary since the developer-preferred location of Pecos Road, east of Sossaman, is at the mid-section line. Several attempts were made to shift the alignment down to the mid-section line by means of a set of reverse curves. However, shifting the alignment in this fashion was not considered feasible since it would require passing through the landfill.

Alignment 1 requires the construction of new bridges over the EMF and UPRR tracks. These bridges are on a severe skew and are therefore quite long. The bridge over the UPRR tracks would also pass over the Rittenhouse Channel.

5.2.2 Rittenhouse Road Alignment Description

In this alignment alternative, Rittenhouse Road experiences a severe realignment (see Figure 5.1 and Conceptual Alignment Maps, Appendix A). West of Power Road, Rittenhouse Road will be abandoned. Rittenhouse Road will begin at the mid-section line between Pecos Road and Germann Road. Just east of this intersection the roadway will be brought back to is current alignment for approximately 600m (1970'). At this point the road turns to the south and makes an 80^{o} intersection with Germann Road. Just south of Germann Road, Rittenhouse Road curves toward the east and forms a 90^{o} intersection with Sossaman Road. Finally, east of Sossaman Road, Rittenhouse Road is brought back to its current alignment.

In addition to this alternative, Rittenhouse Road could be terminated at its new intersection with Sossaman Road instead of at Power Road.



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REVISIONS:

PROJECT:
Pecos Road Alignment Study
Alignment Alternative #1

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FIGURE NO.
5.1

5.3 Alignment 2

5.3.1 Pecos Road Alignment Description

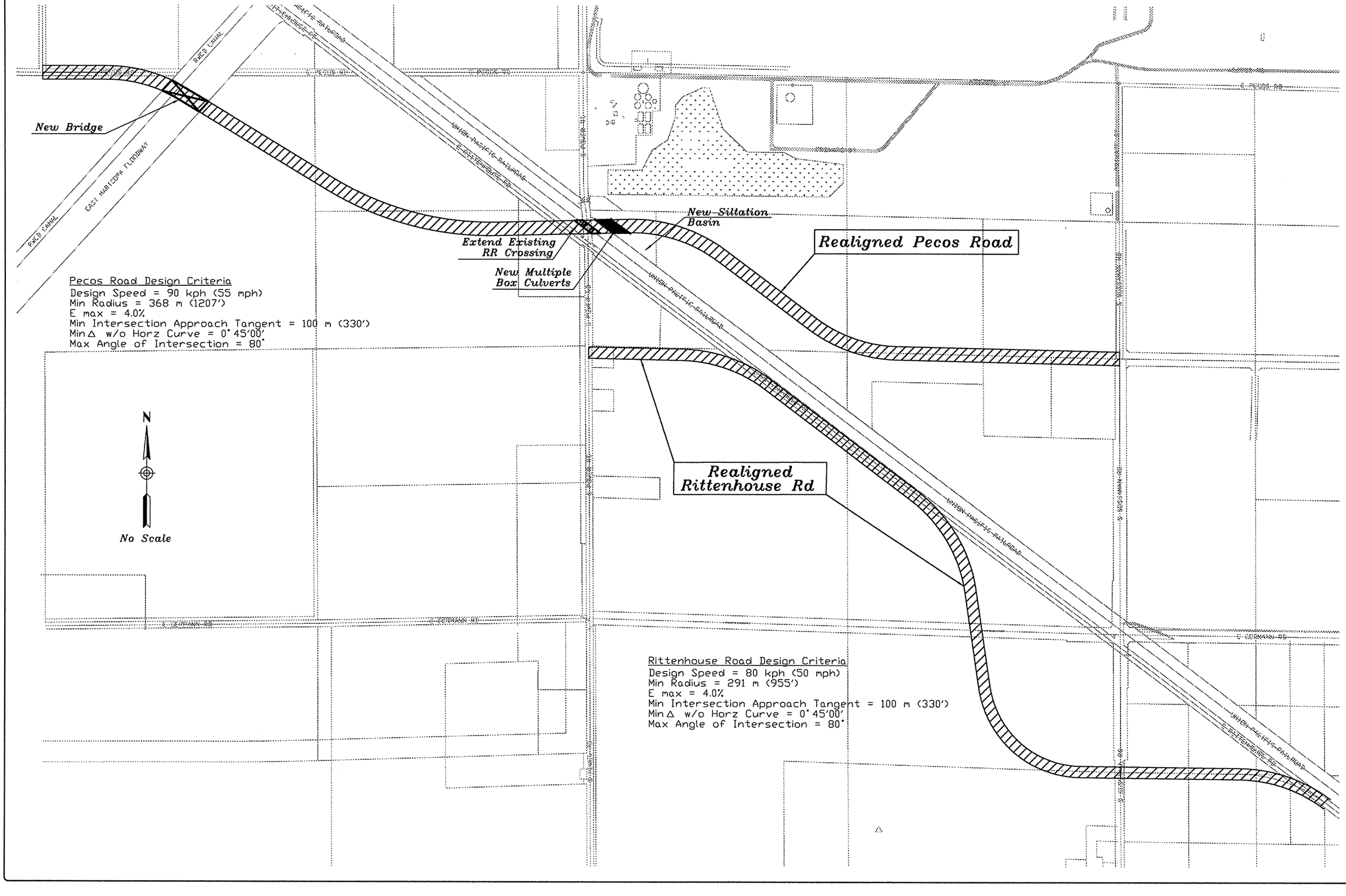
Alignment 2 is significantly different from Alignment 1. Instead of following the section line, Pecos Road is shifted approximately 400m (1320') to the south (see Figure 5.2 and Conceptual Alignment Maps, Appendix A). This shift is made for the following reasons: first, it allows Pecos Road to cross the EMF nearly perpendicular thereby reducing the bridge length, and second, it will not require a new railroad crossing since it utilizes the existing crossing at Power Road.

The alignment itself is essentially two sets of large reverse curves. The westernmost set provides a nearly perpendicular EMF crossing and a perpendicular Power Road intersection. The second set of reverse curves again shifts the alignment to the south in order to match into Pecos Road at Sossaman Road.

As with Alignment 1, Alignment 2 will require a new bridge over the EMF. In this case, however, the bridge will be significantly shorter. A new bridge over the UPRR tracks will not be required with this alignment but the existing crossing will need to be extended. One feature unique to this alignment is that the FCDMC siltation basin east of Power Road will need to be relocated. Relocating this basin will require that additional right-of-way be acquired.

5.3.2 Rittenhouse Road Alignment Description

The alignment of Rittenhouse Road in this alternative is the same as that shown for Alignment 1.



Pecos Road Design Criteria
Design Speed = 90 kph (55 mph)
Min Radius = 368 m (1207')
E max = 4.0%
Min Intersection Approach Tangent = 100 m (330')
Min Δ w/o Horz Curve = 0° 45'00"
Max Angle of Intersection = 80°

Rittenhouse Road Design Criteria
Design Speed = 80 kph (50 mph)
Min Radius = 291 m (955')
E max = 4.0%
Min Intersection Approach Tangent = 100 m (330')
Min Δ w/o Horz Curve = 0° 45'00"
Max Angle of Intersection = 80°

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Alignment Alternative #2

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FIGURE NO.
5.2

5.4 Alignment 3

5.4.1 Pecos Road Alignment Description

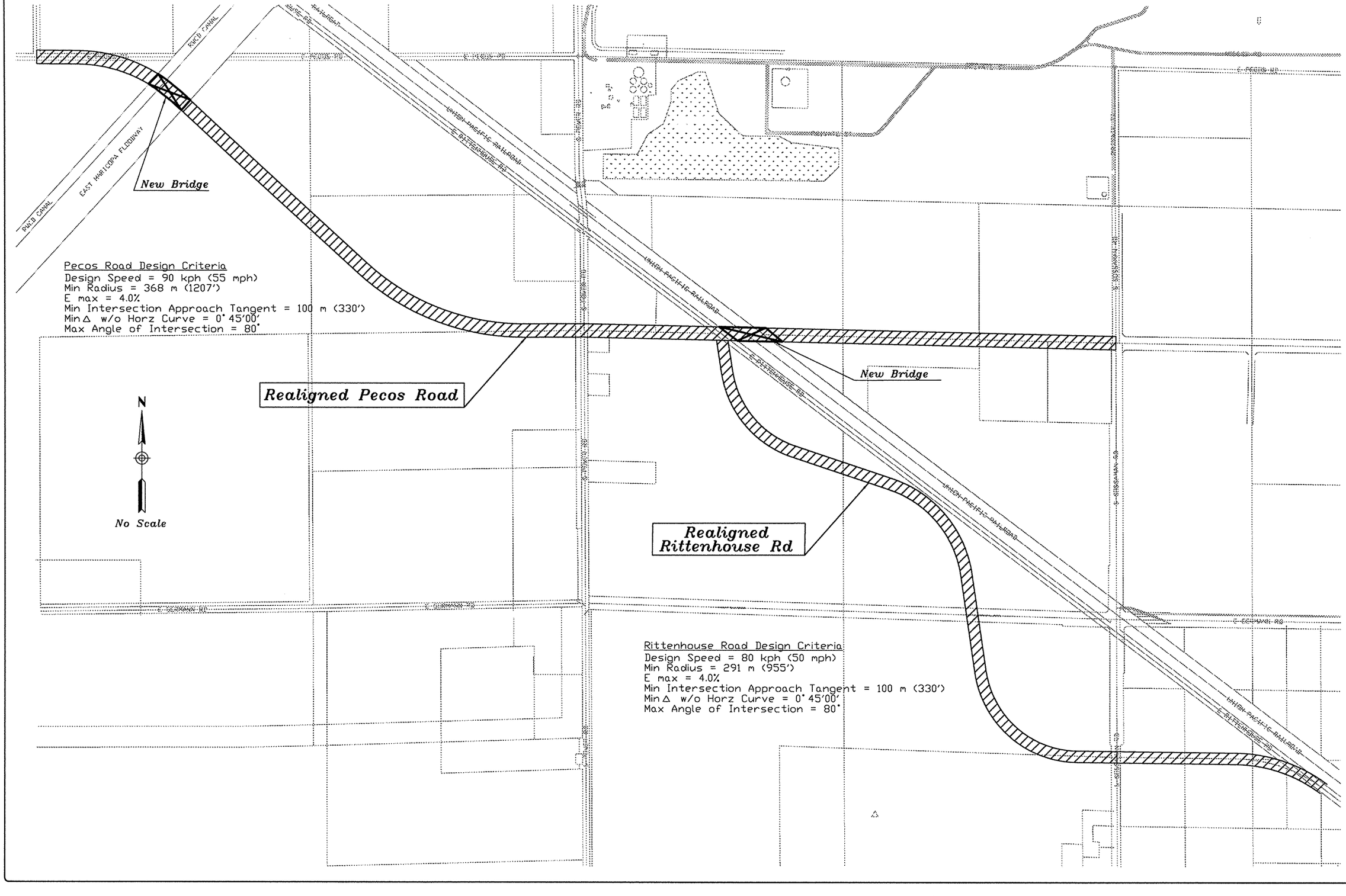
Alignment 3 is similar to Alignment 2 in that it is shifted to the south and forms a nearly perpendicular crossing with the EMF (see Figure 5.3 and Conceptual Alignment Maps, Appendix A). However, the Alignment 3 shift is more significant and moves the Pecos Road intersection with Power Road to the mid-section line north of Germann Road. The reason for locating the Power Road intersection in this location is to facilitate signalization on Power Road and to more quickly align Pecos Road with the tie-in point at Sossaman Road.

As in Alignment 1, new bridges will be required over the EMF and UPRR tracks. Alignment 3, however, has the most perpendicular EMF crossing of the three alignments and therefore has the shortest bridge length. Due to the steep grades associated with the UPRR Bridge, no access could be provided to the parcel that lies to the northeast of the bridge.

5.4.2 Rittenhouse Road Alignment Description

The alignment of Rittenhouse Road in this alternative is unique from the previous two. The key difference between the two Rittenhouse alignments is the termination point. In this alternative, Rittenhouse Road terminates at Pecos Road at the intersection of Alignment 3 and the existing Rittenhouse Road alignment (see Figure 5.3 and Conceptual Alignment Maps, Appendix A). Preferably, this intersection would occur further to the east, however, doing so would require an additional railroad crossing and Rittenhouse Channel crossing. Due to the steep grades that will be associated with the UPRR Bridge, Rittenhouse Road will intersect Pecos Road well above grade.

Like the previous Rittenhouse Road alignment examined, this alignment will allow Rittenhouse Road to be terminated at Sossaman Road.



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PROJECT:

Pecos Road Alignment Study
Alignment Alternative #3

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03/6/01

JOB NO.

FIGURE NO.
5.3

5.5 Alignment Evaluation & Recommendation

Each of the above described alignment alternatives is evaluated based on four criteria: roadway geometrics, utility impacts, property impacts, and overall cost (see Table 5.1). With the exception of property impacts, no socio-economic evaluation was completed. This type of evaluation falls outside of the project scope. It is recommended that a socio-economic evaluation be completed later in design.

Alignment 3 has the best roadway geometrics of any of the Pecos Road alternatives because it has the fewest curves and avoids the offset intersection used in Alignment 1. However, the grade change for the UPRR Bridge creates an undesirable Rittenhouse Road intersection location and limits access to adjoining parcels. In addition, the Rittenhouse Road alignment associated with Alignment 3 has several sets of sharp reverse curves. Therefore, Alignment 2 has the preferred roadway geometrics.

Alignment 2 impacts the existing utilities the least because it utilizes the existing at-grade railroad crossing and does not require a grade-separated crossing like Alignments 1 and 3.

Alignment 1 has the least property impacts because it utilizes the existing right-of-way along the section line and it does not divide the Power Ranch Development. Alignment 3 has the most property impacts because it severely divides the Power Ranch development and takes a mini storage facility on Power Road.

The construction cost estimates for each alignment alternative were also evaluated (see Appendix B). The estimates were developed from the cross sections, utility impacts, and property impacts described above. In addition, the estimates were broken out by jurisdiction according to the City and Town Limits Maps (see Appendix D). Although the alignments had many distinguishing cost features, the key cost difference is the new bridge required for the UPRR tracks. The least expensive alignment alternative is Alignment 2.

TABLE 5.1 ALIGNMENT EVALUATION MATRIX

ALIGNMENT ALTERNATIVE*	ROADWAY DESIGN FEATURES					
	ROADWAY GEOMETRICS	UTILITY IMPACTS	PROPERTY IMPACTS	NEW R/W (m^2)	PROJECT COSTS	
ALIGNMENT 1 **Follows Pecos Road Section Line**	• Follows Section Line • Offset Intersections at Sossaman Road • Sharp Skew with EMF	• Relocates 7 12kV SRP Power Poles • Relocates 5 USWest Telephone pedestals • Requires New UPRR Grade-separation	• Takes 2 Buildings Between Power Rd & Sossaman Rd. • Takes 1 Building at Power Rd, Rittenhouse Rd intersection	169,610	Construction = $ 22,601,500.00 Right-of-Way = $ 2,066,000.00 Utility = $ 40,500.00 **Total = $ 24,708,000.00**	
ALGINMENT 2 **Uses Existing Railroad Crossing**	• Uses Two Sets of Reverse Curves • More Perpendicular to EMF Than Alignment 1 • Will be difficult to Signalize Power Rd	• Relocates 6 12kV SRP Power Poles • Requires Widening of Existing UPRR Crossing • Relocates FCDMC Siltation Basin	• Divides the Power Ranch Planned Area Development • Takes 1 Building at Power Rd, Rittenhouse Rd intersection	215,250	Construction = $ 15,619,000.00 Right-of-Way = $ 2,469,000.00 Utility = $ 24,000.00 **Total = $ 18,112,000.00**	**PREFERRED ALIGNMENT ALTERNATIVE**
ALIGNMENT 3 **Crosses Power Rd at Mid-Section Line**	• Uses One Set of Reverse Curves • More Perpendicular to EMF Than Alignments 1 & 2 • Several Sharp Reverse Curves on Rittenhouse Rd	• Relocates 2 12kV SRP Power Poles • Relocates 1 USWest Telephone pedestal • Requires New UPRR Grade-separation	• Severely Divides the Power Ranch Planned Area Development • Takes 1 Building and Mini Storage facility at Power Rd intersection.	208,203	Construction = $ 23,033,000.00 Right-of-Way = $ 2,913,500.00 Utility = $ 10,500.00 **Total = $ 25,957,000.00**	

* Each Alignment Alternative includes both Pecos Road and Rittenhouse Road improvements (see Conceptual Alignment Maps, Appendix A).

In evaluating each of the above described alignment alternatives, it is important to identify those critical characteristics that may eliminate an alignment from further consideration. For Pecos Road, these critical characteristics would include offset intersections, a new grade-separation at the UPRR, and Power Ranch impacts. Of the alignments evaluated, Alignment 2 best avoids the critical characteristics. Alignment 2 is the preferred alignment alternative.

6.0 REFERENCES

1. "*Final Access Control and Corridor Improvement Study*", Power Road – Hunt Highway to Guadalupe Road. Report prepared by AMEC Infrastructure, Inc.; June 2000.

2. "*Traffic Analysis For Power Road*", Power Road Access Control & Corridor Improvement Study. Report prepared by Bolduc, Smiley & Associates, Inc.; February 24, 2000.

3. "*Conceptual Drainage Report*", Power Road Access Control & Corridor Improvement Study. Report prepared by AMEC Infrastructure, Inc.; March 2000.

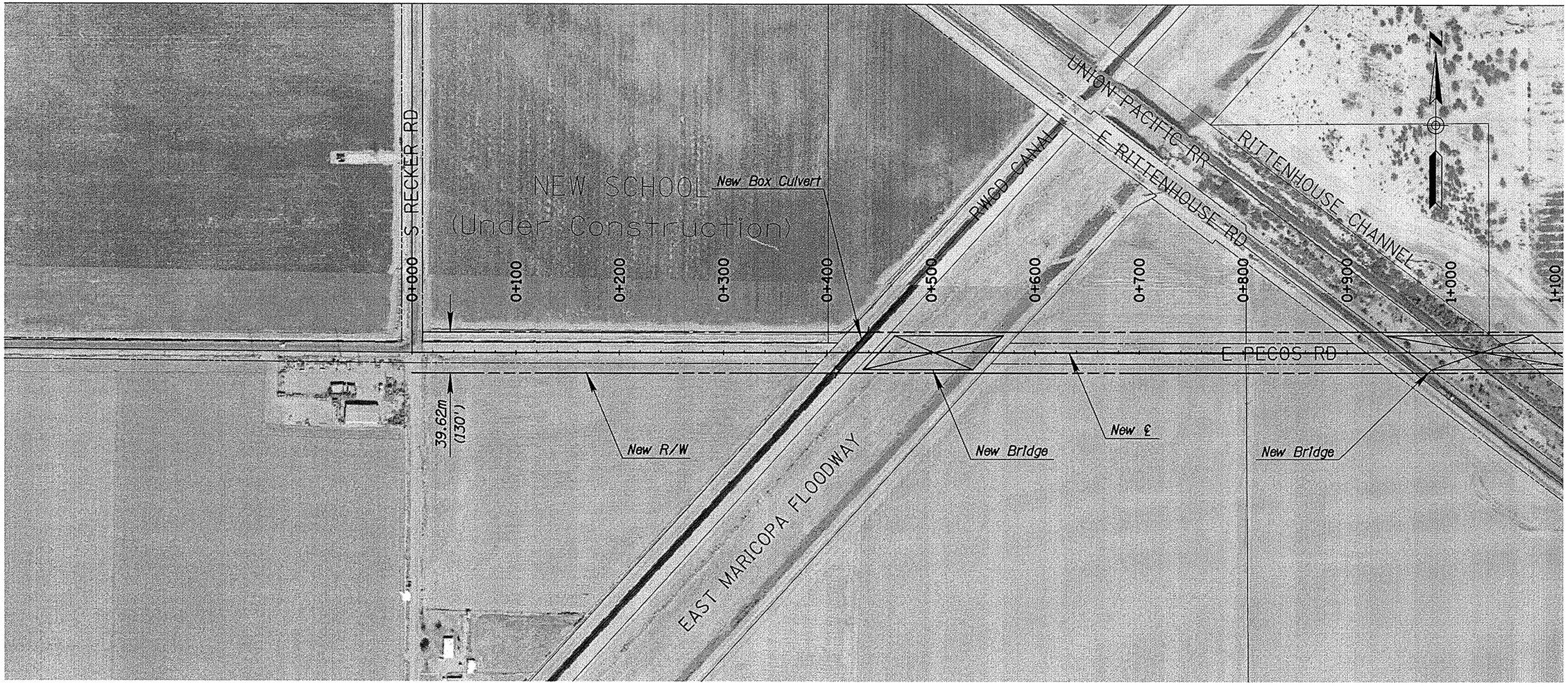
4. "Environmental Overview", Power Road Access Control & Corridor Improvement Study. Report prepared by Logan Simpson Design, Inc.; March 2000.

Note:

All works cited above were prepared for the Maricopa County Department of Transportation (MCDOT).

APPENDIX A
CONCEPTUAL ALIGNMENT MAPS

F.W.H.A. REGION	STATE	CONTRACT NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
9	AZ.	1998-33		5	



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MARICOPA COUNTY
DEPARTMENT OF TRANSPORTATION
ENGINEERING DIVISION

PECOS ROAD ALIGNMENT STUDY
RECKER ROAD TO SOSSAMAN ROAD
CONTRACT NO. 1998-33 TASK:K

	BY	DATE
DESIGNED	E. Williams	3/01
DRAWN	M. Wang	3/01
CHECKED	V. Bennett	3/01

PRELIMINARY
NOT FOR
CONSTRUCTION

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ALTERNATIVE 1
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mb.dgn 12/02/94

F.W.H.A. REGION	STATE	CONTRACT NO.	SHEET NO.	TOTAL SHEETS	RECORD DRAWING
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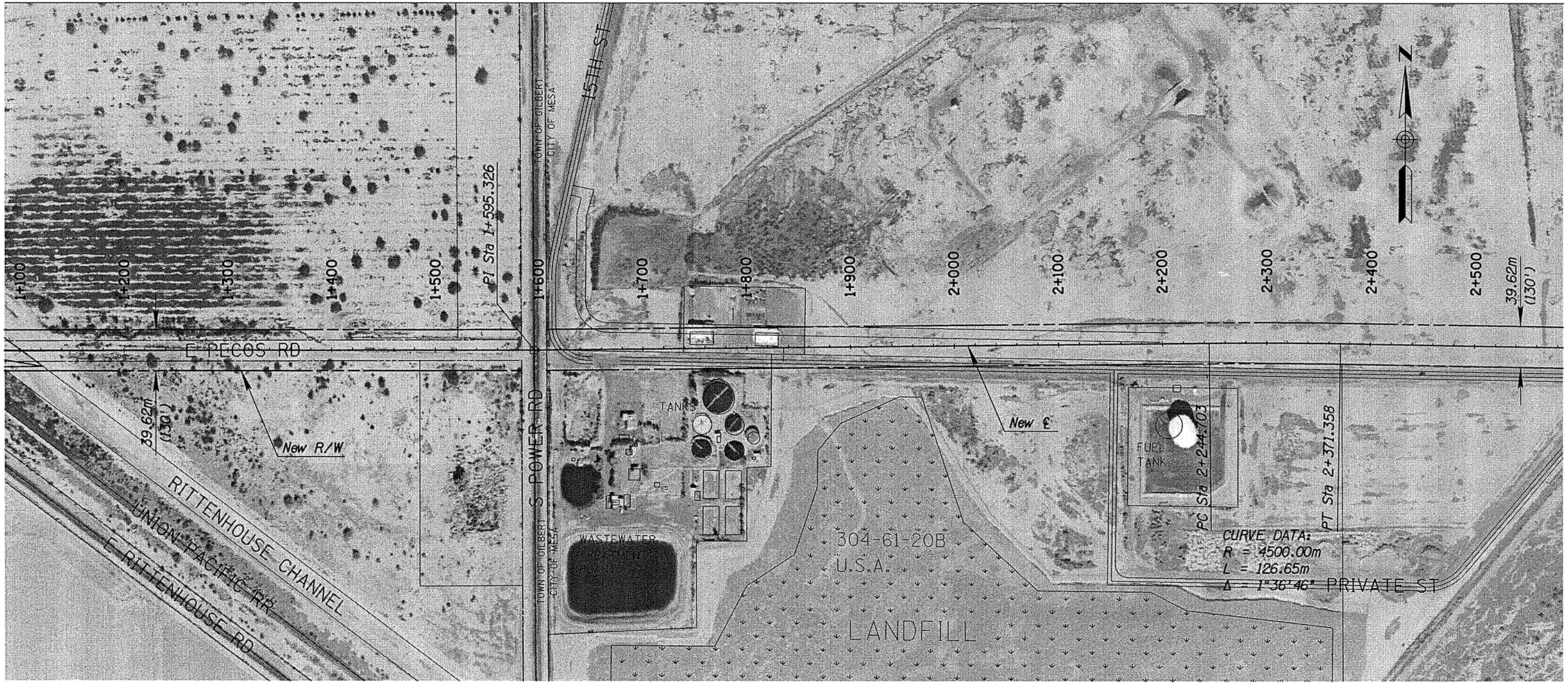

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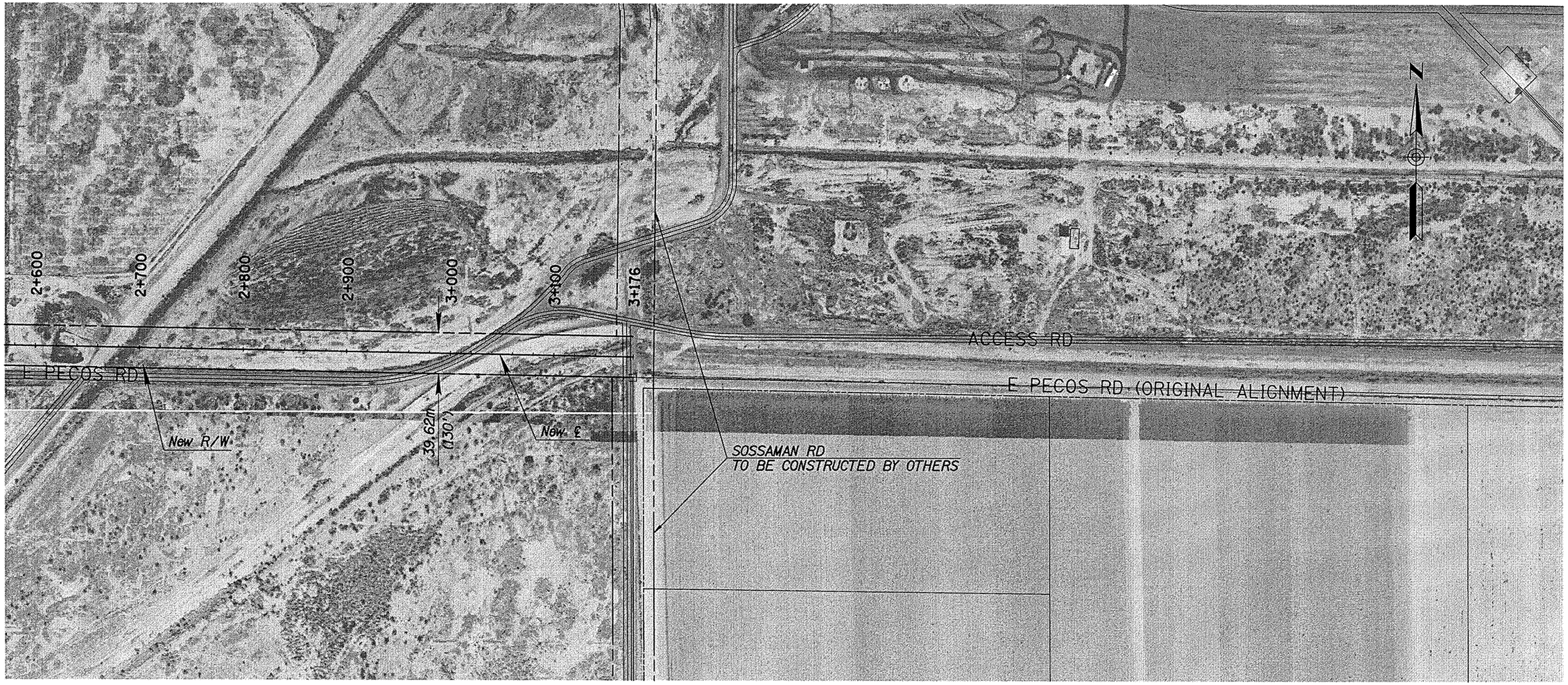

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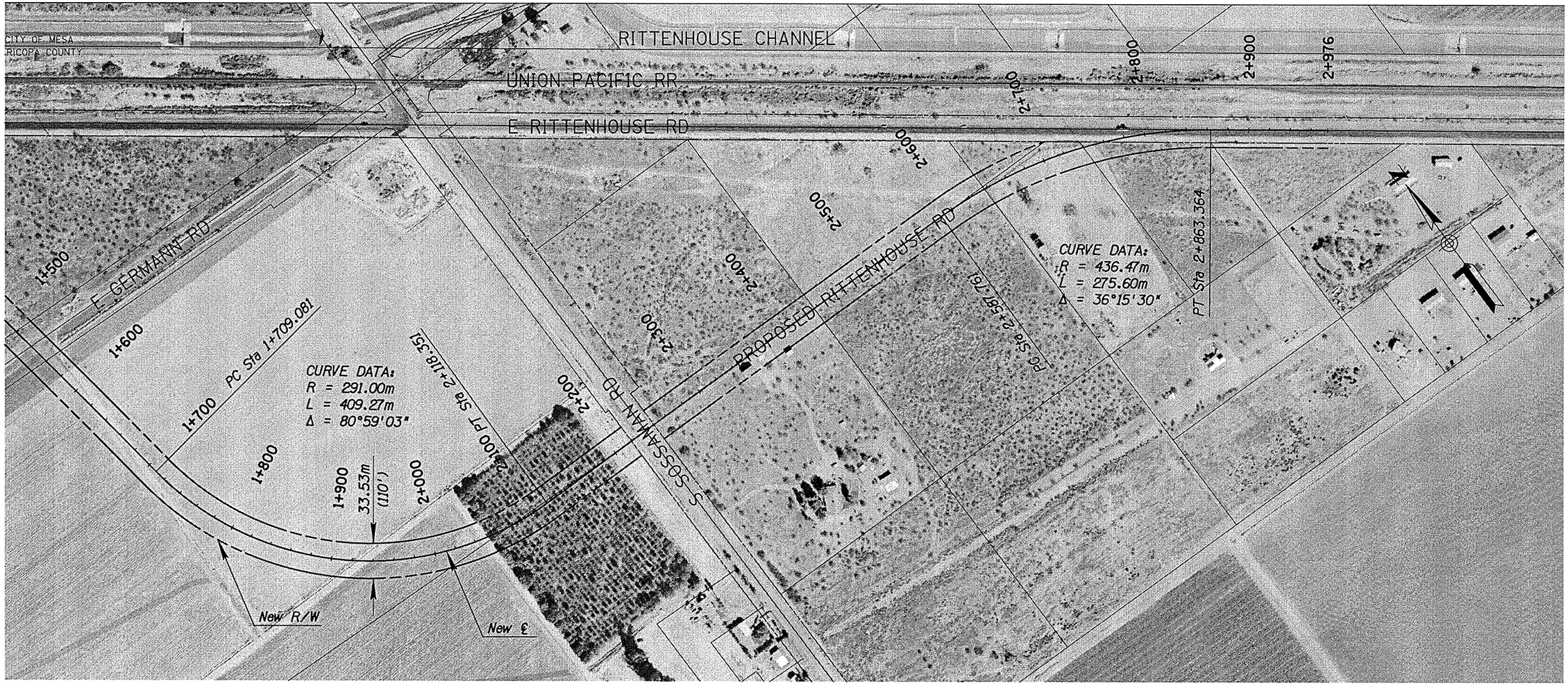

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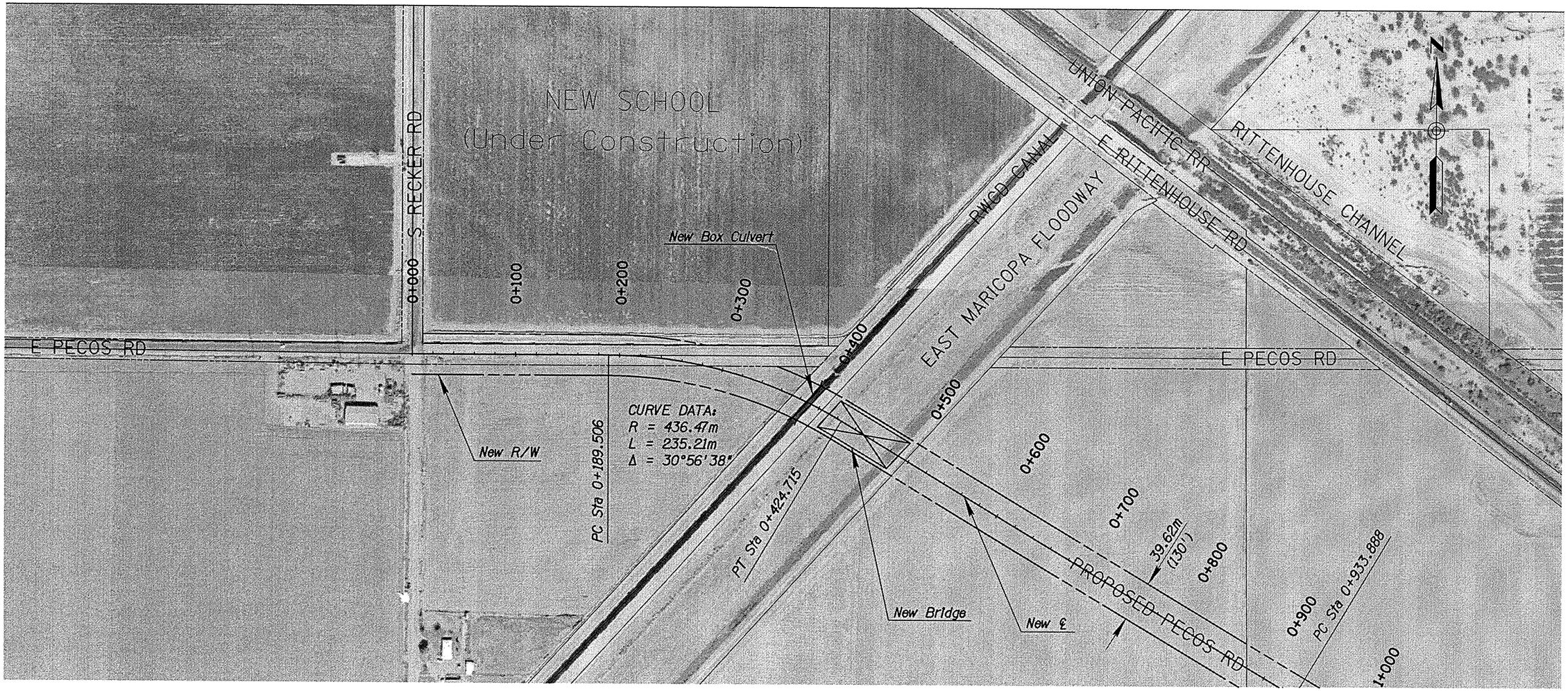

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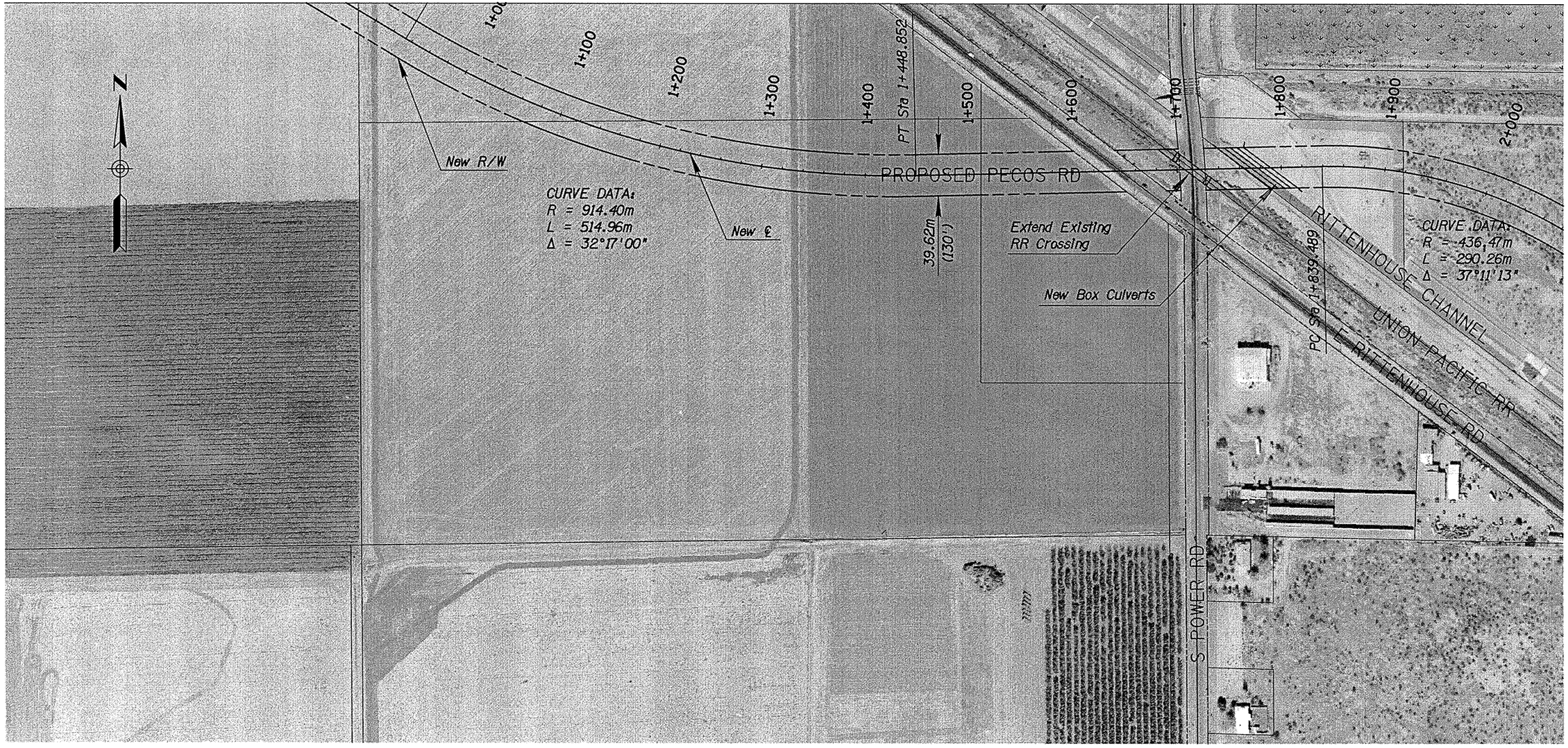

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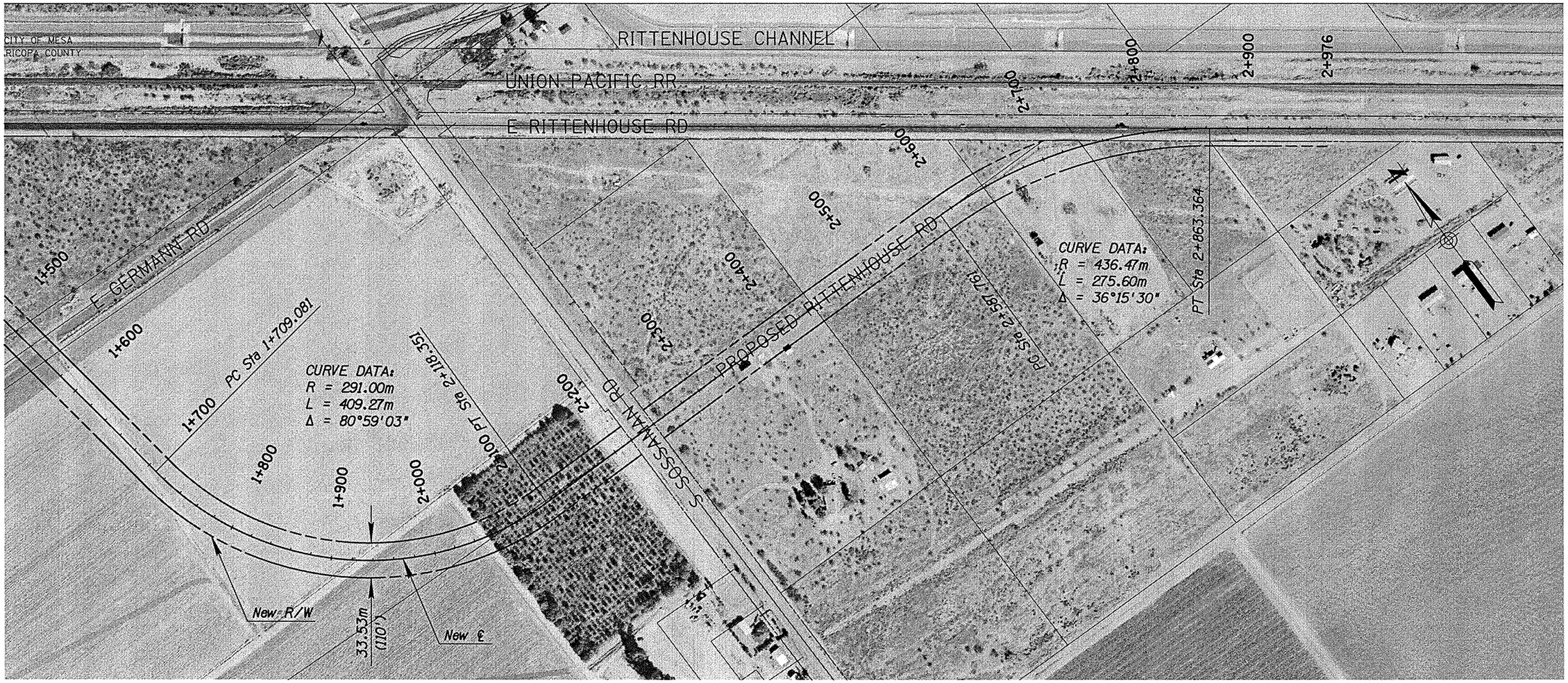

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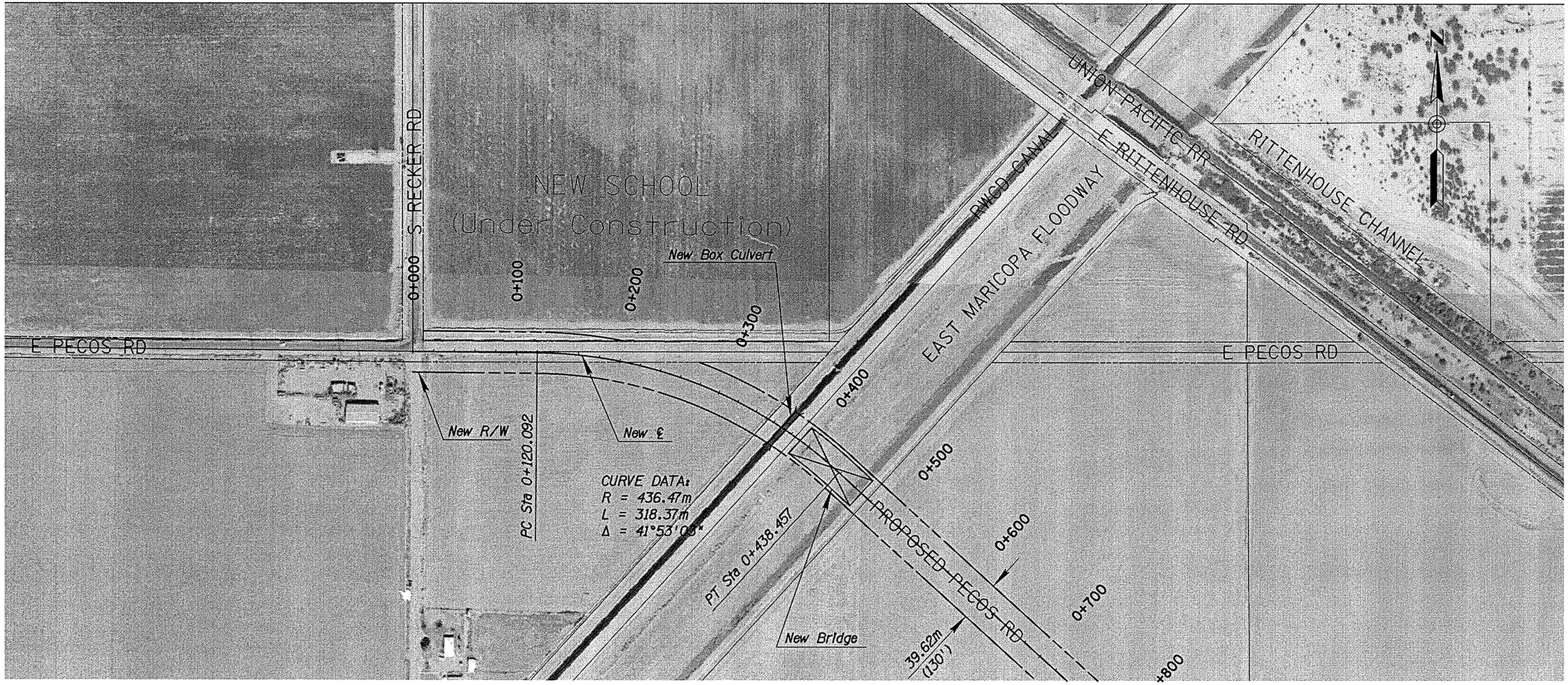

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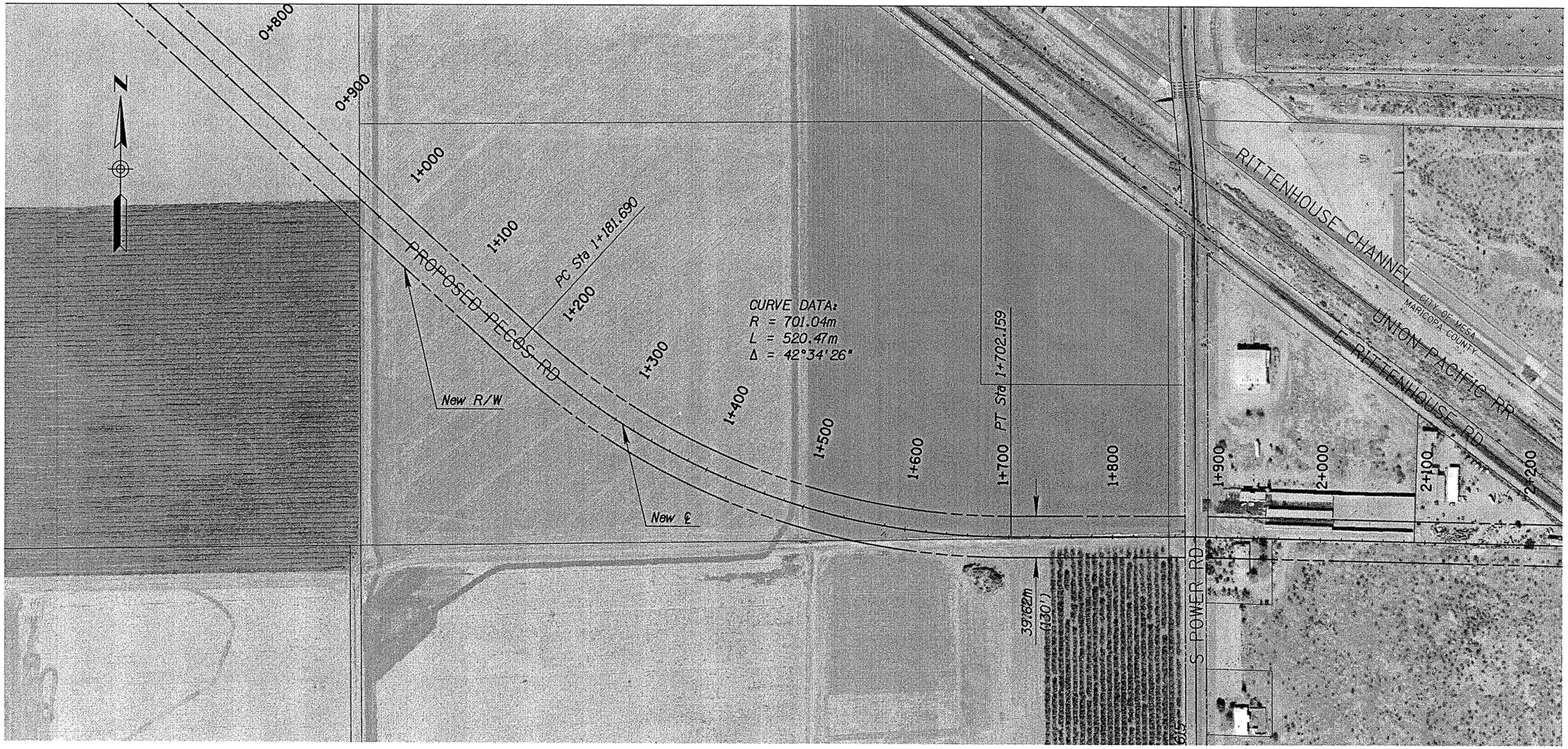

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DEPARTMENT OF TRANSPORTATION
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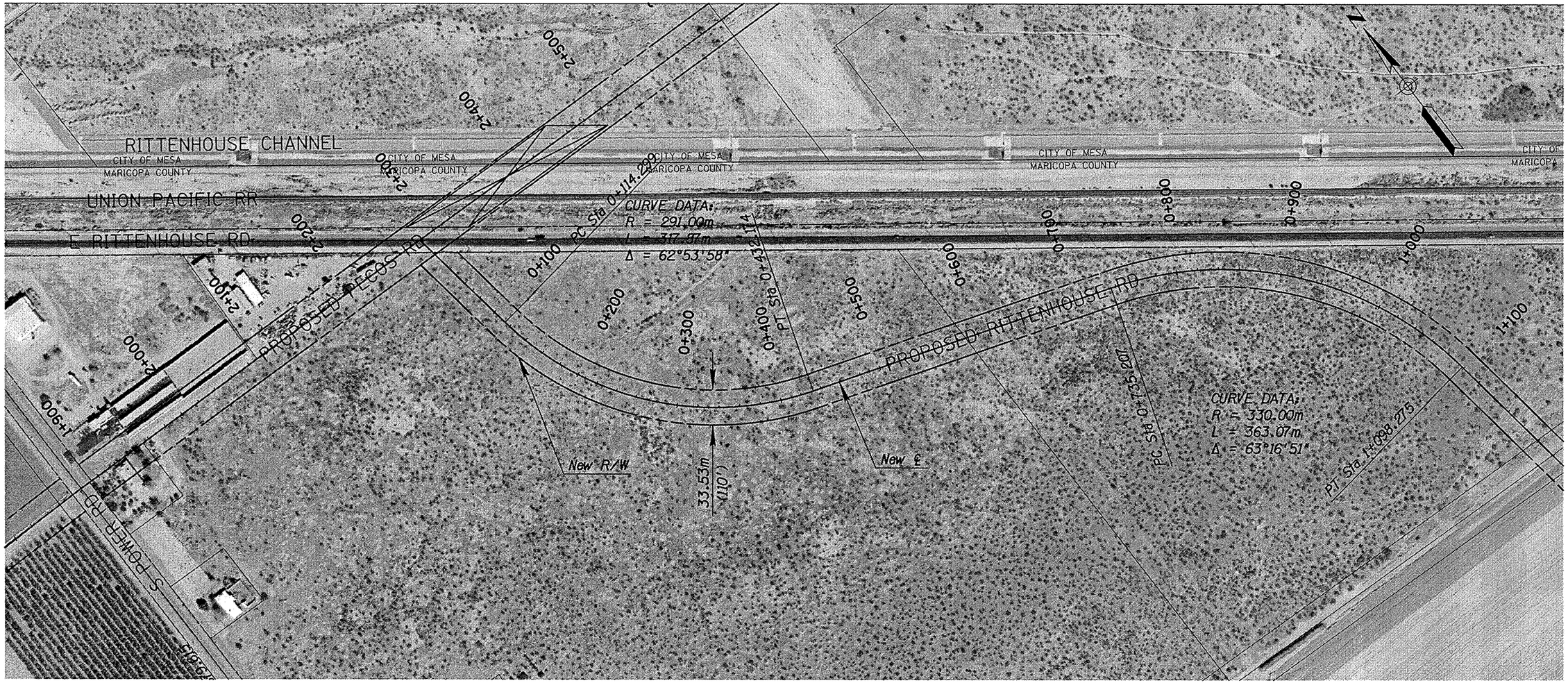

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MARICOPA COUNTY
DEPARTMENT OF TRANSPORTATION
ENGINEERING DIVISION

PECOS ROAD ALIGNMENT STUDY
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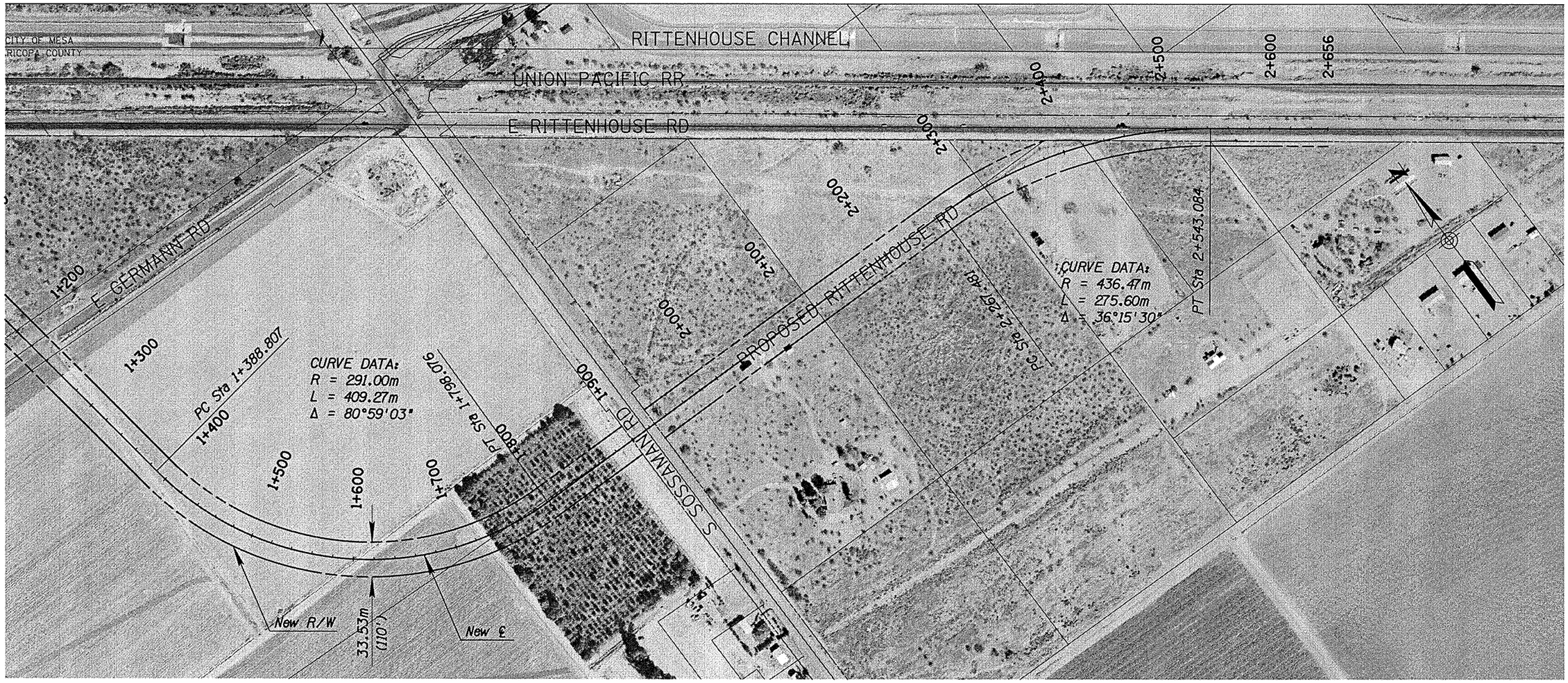

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PRELIMINARY
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CONSTRUCTION

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ALTERNATIVE 3
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APPENDIX B
PRELIMINARY COST ESTIMATES

CONSTRUCTION COST ESTIMATE

ALIGNMENT: 1 - TOWN OF GILBERT PORTION
PECOS RD

Item #	*Description*	*Unit*	*Quantity*	*Unit Cost*	*Total*
107.01100	N.P.D.E.S.	L.S.	1	$4,000.00	$4,000
107.09200	Community Relations	Allowance	1	$20,000.00	$20,000
205.03000	Roadway Excavation	CM	3,000	$4.50	$13,500
	Roadway Borrow	CM	207,000	$9.00	$1,863,000
	New Asphalt Pavement	SQ M	33,538	$19.15	$642,253
340.01020	Single Curb	M	2,430	$36.00	$87,480
340.01120	Conc. C & G	M	2,858	$34.50	$98,601
340.00000	Conc S/W Ramp Std Det 231 Type "A"	EA	8	$700.00	$5,600
340.06950	Concrete Sidewalk Std Det 230	SQ M	5,144	$32.00	$164,608
340.09750	Concrete Driveway w/5' Wings, Std. Det. 250	SQ M	224	$40.00	$8,960
	Guardrail	M	488	$78.00	$38,064
	Guardrail End Terminals	EA	4	$2,000.00	$8,000
350.01110	Removal of Existing Improvements	L.S.	1	$95,000.00	$95,000
402.00000	Traffic Signing & Striping - 6 lanes	M	1,595	$9.00	$14,355
403.00000	Traffic Signing & Striping - 4 lanes	M	0	$6.40	$0
402.00000	Traffic Signal, Full Intersection	EA	1.5	$110,000.00	$165,000
	Drainage	L.S.	1	$300,000.00	$300,000
	Railroad Crossing	EA	0	$375,000.00	$0
	Box Culvert	SQ M	258	$400.00	$103,200
	EMF Bridge	SQ M	3,438	$540.00	$1,856,520
	UPRR Bridge	SQ M	5,015	$540.00	$2,708,100
		Subtotal			$8,196,241
110.01000	Mobilization @ 5%	L.S.	1	$409,812.00	$409,812
401.00000	Traffic Control @ 3%	L.S.	1	$245,887.00	$245,887

Subtotal Construction		$8,851,940
Contingency	20%	$1,770,388
Subtotal		**$10,622,328**
Design	12%	$1,274,679
Construction Management	15%	$1,593,349
Administration	12%	$1,274,679
Right-of-Way		$342,000
Utility Relocation		$12,500
GRAND TOTAL		**$15,119,535**

CONSTRUCTION COST ESTIMATE

ALIGNMENT: 1 - CITY OF MESA PORTION
PECOS RD

Item #	*Description*	*Unit*	*Quantity*	*Unit Cost*	*Total*
107.01100	N.P.D.E.S.	L.S.	1	$4,000.00	$4,000
107.09200	Community Relations	Allowance	1	$20,000.00	$20,000
205.03000	Roadway Excavation	CM	1,400	$4.50	$6,300
	New Asphalt Pavement	SQ M	36,624	$19.15	$701,350
340.01020	Single Curb	M	2,688	$36.00	$96,768
340.01120	Conc. C & G	M	3,162	$34.50	$109,089
340.00000	Conc S/W Ramp Std Det 231 Type "A"	EA	8	$700.00	$5,600
340.06950	Concrete Sidewalk Std Det 230	SQ M	4,743	$32.00	$151,776
340.09750	Concrete Driveway w/5' Wings, Std. Det. 250	SQ M	224	$40.00	$8,960
350.01110	Removal of Existing Improvements	L.S.	1	$63,000.00	$63,000
402.00000	Traffic Signing & Striping - 6 lanes	M	1,581	$9.00	$14,229
403.00000	Traffic Signing & Striping - 4 lanes	M	0	$6.40	$0
402.00000	Traffic Signal - Full Intersection	EA	1.5	$110,000.00	$165,000
	Drainage	L.S.	1	$300,000.00	$300,000
	Box Culvert	SQ M	0	$400.00	$0
	Bridge	SQ M	0	$540.00	$0
		Subtotal			$1,646,072
110.01000	Mobilization @ 5%	L.S.	1	$82,304.00	$82,304
401.00000	Traffic Control @ 3%	L.S.	1	$49,382.00	$49,382

Subtotal Construction		$1,777,758
Contingency	20%	$355,552
Subtotal		**$2,133,309**
Design	12%	$255,997
Construction Management	15%	$319,996
Administration	12%	$255,997
Right-of-Way		$789,029
Utility Relocation		$8,000
GRAND TOTAL		**$3,762,329**

CONSTRUCTION COST ESTIMATE

ALIGNMENT: 2 - TOWN OF GILBERT PORTION
PECOS RD

Item #	*Description*	*Unit*	*Quantity*	*Unit Cost*	*Total*
107.01100	N.P.D.E.S.	L.S.	1	$4,000.00	$4,000
107.09200	Community Relations	Allowance	1	$20,000.00	$20,000
205.03000	Roadway Excavation	CM	3,300	$4.50	$14,850
	New Asphalt Pavement	SQ M	37,317	$19.15	$714,621
340.01020	Single Curb	M	2,703	$36.00	$97,308
340.01120	Conc. C & G	M	3,180	$34.50	$109,710
340.00000	Conc S/W Ramp Std Det 231 Type "A"	EA	8	$700.00	$5,600
340.06950	Concrete Sidewalk Std Det 230	SQ M	5,724	$32.00	$183,168
340.09750	Concrete Driveway w/5' Wings, Std. Det. 250	SQ M	224	$40.00	$8,960
350.01110	Removal of Existing Improvements	L.S.	1	$95,000.00	$95,000
402.00000	Traffic Signing & Striping - 6 lanes	M	1,715	$9.00	$15,435
403.00000	Traffic Signing & Striping - 4 lanes	M	0	$6.40	$0
402.00000	Traffic Signal - Full Intersection	EA	1.5	$110,000.00	$165,000
	Drainage	L.S.	1	$320,000.00	$320,000
	Railroad Crossing	EA	0.5	$375,000.00	$187,500
	Box Culvert	SQ M	203	$400.00	$81,200
	Bridge	SQ M	2,543	$540.00	$1,373,220
		Subtotal			$3,395,572
110.01000	Mobilization @ 5%	L.S.	1	$169,779.00	$169,779
401.00000	Traffic Control @ 3%	L.S.	1	$101,867.00	$101,867

Subtotal Construction		$3,667,218
Contingency	20%	$733,444
Subtotal		**$4,400,661**
Design	12%	$528,079
Construction Management	15%	$660,099
Administration	12%	$528,079
Right-of-Way		$659,000
Utility Relocation		$4,000
GRAND TOTAL		**$6,779,919**

CONSTRUCTION COST ESTIMATE

ALIGNMENT: 2 - CITY OF MESA PORTION

PECOS RD

Item #	*Description*	*Unit*	*Quantity*	*Unit Cost*	*Total*
107.01100	N.P.D.E.S.	L.S.	1	$4,000.00	$4,000
107.09200	Community Relations	Allowance	1	$20,000.00	$20,000
205.03000	Roadway Excavation	CM	1,500	$4.50	$6,750
	New Asphalt Pavement	SQ M	38,770	$19.15	$742,446
340.01020	Single Curb	M	2,846	$36.00	$102,456
340.01120	Conc. C & G	M	3,348	$34.50	$115,506
340.00000	Conc S/W Ramp Std Det 231 Type "A"	EA	8	$700.00	$5,600
340.06950	Concrete Sidewalk Std Det 230	SQ M	5,022	$32.00	$160,704
340.09750	Concrete Driveway w/5' Wings, Std. Det. 250	SQ M	224	$40.00	$8,960
350.01110	Removal of Existing Improvements	L.S.	1	$10,000.00	$10,000
402.00000	Traffic Signing & Striping - 6 lanes	M	1,674	$9.00	$15,066
403.00000	Traffic Signing & Striping - 4 lanes	M	0	$6.40	$0
402.00000	Traffic Signal - Full Intersection	EA	1.0	$110,000.00	$110,000
	Drainage	L.S.	1	$310,000.00	$310,000
	New FCDMC Siltation Basin	L.S.	1	$340,000.00	$340,000
	Railroad Crossing	EA	0.5	$375,000.00	$187,500
	Box Culvert	SQ M	1,080	$400.00	$432,000
	Bridge	SQ M	0	$540.00	$0
		Subtotal			$2,570,988
110.01000	Mobilization @ 5%	L.S.	1	$128,549.00	$128,549
401.00000	Traffic Control @ 3%	L.S.	1	$77,130.00	$77,130

Subtotal Construction		$2,776,667
Contingency	20%	$555,333
Subtotal		**$3,332,000**
Design	12%	$399,840
Construction Management	15%	$499,800
Administration	12%	$399,840
Right-of-Way		$875,000
Utility Relocation		$0
GRAND TOTAL		**$5,506,480**

CONSTRUCTION COST ESTIMATE

ALIGNMENT: 3 - TOWN OF GILBERT PORTION
PECOS RD

Item #	*Description*	*Unit*	*Quantity*	*Unit Cost*	*Total*
107.01100	N.P.D.E.S.	L.S.	1	$4,000.00	$4,000
107.09200	Community Relations	Allowance	1	$20,000.00	$20,000
205.03000	Roadway Excavation	CM	3,600	$4.50	$16,200
	New Asphalt Pavement	SQ M	41,284	$19.15	$790,589
340.01020	Single Curb	M	2,990	$36.00	$107,640
340.01120	Conc. C & G	M	3,518	$34.50	$121,371
340.00000	Conc S/W Ramp Std Det 231 Type "A"	EA	8	$700.00	$5,600
340.06950	Concrete Sidewalk Std Det 230	SQ M	6,332	$32.00	$202,624
340.09750	Concrete Driveway w/5' Wings, Std. Det. 250	SQ M	252	$40.00	$10,080
350.01110	Removal of Existing Improvements	L.S.	1	$95,000.00	$95,000
402.00000	Traffic Signing & Striping - 6 lanes	M	1,880	$9.00	$16,920
403.00000	Traffic Signing & Striping - 4 lanes	M	0	$6.40	$0
402.00000	Traffic Signal - Full Intersection	EA	1.5	$110,000.00	$165,000
	Drainage	L.S.	1	$330,000.00	$330,000
	Box Culvert	SQ M	193	$400.00	$77,200
	Bridge	SQ M	2,534	$540.00	$1,368,360
		Subtotal			$3,330,584
110.01000	Mobilization @ 5%	L.S.	1	$166,529.00	$166,529
401.00000	Traffic Control @ 3%	L.S.	1	$99,918.00	$99,918

Subtotal Construction		$3,597,031
Contingency	20%	$719,406
Subtotal		**$4,316,437**
Design	12%	$517,972
Construction Management	15%	$647,466
Administration	12%	$517,972
Right-of-Way		$762,000
Utility Relocation		$0
GRAND TOTAL		**$6,761,847**

CONSTRUCTION COST ESTIMATE

ALIGNMENT: 3 - CITY OF MESA PORTION
PECOS RD

Item #	*Description*	*Unit*	*Quantity*	*Unit Cost*	*Total*
107.01100	N.P.D.E.S.	L.S.	1	$4,000.00	$4,000
107.09200	Community Relations	Allowance	1	$15,000.00	$15,000
205.03000	Roadway Excavation	CM	970	$4.50	$4,365
	Roadway Borrow	CM	104,000	$9.00	$936,000
	New Asphalt Pavement	SQ M	25,152	$19.15	$481,661
340.01020	Single Curb	M	1,846	$36.00	$66,456
340.01120	Conc. C & G	M	2,172	$34.50	$74,934
340.00000	Conc S/W Ramp Std Det 231 Type "A"	EA	6	$700.00	$4,200
340.06950	Concrete Sidewalk Std Det 230	SQ M	3,258	$32.00	$104,256
340.09750	Concrete Driveway w/5' Wings, Std. Det. 250	SQ M	168	$40.00	$6,720
	Guardrail	M	244	$78.00	$19,032
	Guardrail End Terminals	EA	2	$2,000.00	$4,000
350.01110	Removal of Existing Improvements	L.S.	1	$5,000.00	$5,000
402.00000	Traffic Signing & Striping - 6 lanes	M	1,086	$9.00	$9,774
403.00000	Traffic Signing & Striping - 4 lanes	M	0	$6.40	$0
402.00000	Traffic Signal - Full Intersection	EA	1.0	$110,000.00	$110,000
	Drainage	L.S.	1	$210,000.00	$210,000
	Railroad Crossing	EA	0.0	$325,000.00	$0
	Box Culvert	SQ M	0	$400.00	$0
	UPRR Bridge	SQ M	2,508	$540.00	$1,354,320
		Subtotal			$3,409,718
110.01000	Mobilization @ 5%	L.S.	1	$170,486.00	$170,486
401.00000	Traffic Control @ 3%	L.S.	1	$102,292.00	$102,292

Subtotal Construction		$3,682,496
Contingency	20%	$736,499
Subtotal		**$4,418,995**
Design	12%	$530,279
Construction Management	15%	$662,849
Administration	12%	$530,279
Right-of-Way		$465,000
Utility Relocation		$0
GRAND TOTAL		**$6,607,403**

CONSTRUCTION COST ESTIMATE

ALIGNMENT: 3 - TOWN OF QUEEN CREEK PORTION
PECOS RD

Item #	*Description*	*Unit*	*Quantity*	*Unit Cost*	*Total*
107.01100	N.P.D.E.S.	L.S.	1	$4,000.00	$4,000
107.09200	Community Relations	Allowance	1	$10,000.00	$10,000
205.03000	Roadway Excavation	CM	430	$4.50	$1,935
	Roadway Borrow	CM	104,600	$9.00	$941,400
	New Asphalt Pavement	SQ M	11,047	$19.15	$211,550
340.01020	Single Curb	M	811	$36.00	$29,196
340.01120	Conc. C & G	M	954	$34.50	$32,913
340.00000	Conc S/W Ramp Std Det 231 Type "A"	EA	6	$700.00	$4,200
340.06950	Concrete Sidewalk Std Det 230	SQ M	1,431	$32.00	$45,792
340.09750	Concrete Driveway w/5' Wings, Std. Det. 250	SQ M	56	$40.00	$2,240
	Guardrail	M	244	$78.00	$19,032
	Guardrail End Terminals	EA	2	$2,000.00	$4,000
350.01110	Removal of Existing Improvements	L.S.	1	$25,000.00	$25,000
402.00000	Traffic Signing & Striping - 6 lanes	M	477	$9.00	$4,293
403.00000	Traffic Signing & Striping - 4 lanes	M	0	$6.40	$0
402.00000	Traffic Signal - Full Intersection	EA	1.5	$110,000.00	$165,000
	Drainage	L.S.	1	$90,000.00	$90,000
	Railroad Crossing	EA	0.0	$325,000.00	$0
	Box Culvert	SQ M	0	$400.00	$0
	UPRR Bridge	SQ M	2,508	$540.00	$1,354,320
		Subtotal			$2,944,871
110.01000	Mobilization @ 5%	L.S.	1	$147,244.00	$147,244
401.00000	Traffic Control @ 3%	L.S.	1	$88,346.00	$88,346

Subtotal Construction		$3,180,461
Contingency	20%	$636,092
Subtotal		**$3,816,553**
Design	12%	$457,986
Construction Management	15%	$572,483
Administration	12%	$457,986
Right-of-Way		$811,400
Utility Relocation		$6,500
GRAND TOTAL		**$6,122,909**

CONSTRUCTION COST ESTIMATE

ALIGNMENT: 1 - TOWN OF QUEEN CREEK PORTION
RITTENHOUSE RD

Item #	*Description*	*Unit*	*Quantity*	*Unit Cost*	*Total*
107.01100	N.P.D.E.S.	L.S.	1	$4,000.00	$4,000
107.09200	Community Relations	Allowance	1	$30,000.00	$30,000
205.03000	Roadway Excavation	CM	2,600	$4.50	$11,700
	New Asphalt Pavement	SQ M	60,117	$19.15	$1,151,241
340.01020	Single Curb	M	0	$36.00	$0
340.01120	Conc. C & G	M	5,800	$34.50	$200,100
340.00000	Conc S/W Ramp Std Det 231 Type "A"	EA	16	$700.00	$11,200
340.06950	Concrete Sidewalk Std Det 230	SQ M	8,700	$32.00	$278,400
340.09750	Concrete Driveway w/5' Wings, Std. Det. 250	SQ M	392	$40.00	$15,680
350.01110	Removal of Existing Improvements	L.S.	1	$109,000.00	$109,000
402.00000	Traffic Signing & Striping - 6 lanes	M	0	$9.00	$0
403.00000	Traffic Signing & Striping - 4 lanes	M	2,900	$6.40	$18,560
402.00000	Traffic Signal - Full Intersection	EA	3.0	$110,000.00	$330,000
	Drainage	L.S.	1	$544,000.00	$544,000
	Box Culvert	SQ M	0	$400.00	$0
	Bridge	SQ M	0	$540.00	$0
		Subtotal			$2,703,881
110.01000	Mobilization @ 5%	L.S.	1	$135,194.00	$135,194
401.00000	Traffic Control @ 3%	L.S.	1	$81,116.00	$81,116

Subtotal Construction		$2,920,191
Contingency	20%	$584,038
Subtotal		**$3,504,229**
Design	12%	$420,507
Construction Management	15%	$525,634
Administration	12%	$420,507
Right-of-Way		$935,000
Utility Relocation		$20,000
GRAND TOTAL		**$5,825,878**

CONSTRUCTION COST ESTIMATE

ALIGNMENT: 2 - TOWN OF QUEEN CREEK PORTION
RITTENHOUSE RD

Item #	*Description*	*Unit*	*Quantity*	*Unit Cost*	*Total*
107.01100	N.P.D.E.S.	L.S.	1	$4,000.00	$4,000
107.09200	Community Relations	Allowance	1	$30,000.00	$30,000
205.03000	Roadway Excavation	CM	2,300	$4.50	$10,350
	Roadway Borrow	CM	67,700	$9.00	$609,300
	New Asphalt Pavement	SQ M	53,898	$19.15	$1,032,147
340.01020	Single Curb	M	0	$36.00	$0
340.01120	Conc. C & G	M	5,200	$34.50	$179,400
340.00000	Conc S/W Ramp Std Det 231 Type "A"	EA	16	$700.00	$11,200
340.06950	Concrete Sidewalk Std Det 230	SQ M	7,600	$32.00	$243,200
340.09750	Concrete Driveway w/5' Wings, Std. Det. 250	SQ M	364	$40.00	$14,560
	Guardrail	M	244	$78.00	$19,032
	Guardrail End Terminals	EA	2	$2,000.00	$4,000
350.01110	Removal of Existing Improvements	L.S.	1	$109,000.00	$109,000
402.00000	Traffic Signing & Striping - 6 lanes	M	0	$9.00	$0
403.00000	Traffic Signing & Striping - 4 lanes	M	2,600	$6.40	$16,640
402.00000	Traffic Signal - Full Intersection	EA	3.0	$110,000.00	$330,000
	Drainage	L.S.	1	$488,000.00	$488,000
	Box Culvert	SQ M	0	$400.00	$0
	Bridge	SQ M	0	$540.00	$0
		Subtotal			$3,100,829
110.01000	Mobilization @ 5%	L.S.	1	$155,041.00	$155,041
401.00000	Traffic Control @ 3%	L.S.	1	$93,025.00	$93,025

Subtotal Construction		$3,348,895
Contingency	20%	$669,779
Subtotal		**$4,018,674**
Design	12%	$482,241
Construction Management	15%	$602,801
Administration	12%	$482,241
Right-of-Way		$875,000
Utility Relocation		$4,000
GRAND TOTAL		**$6,464,956**

APPENDIX C
AGENCY MEETING SUMMARIES

AGRA
ENGINEERING GLOBAL SOLUTIONS

AGRA Infrastructure, Inc.
4435 E. Holmes Avenue
Mesa, Arizona 85206
Tel (480) 830-3700
Fax (480) 830-3903

MEETING SUMMARY

DATE: August 10, 2000

TO: **MEETING ATTENDEES**:

Vaughn Bennett	AGRA Infrastructure
Elijah Williams	AGRA Infrastructure
David Townsend	AGRA Infrastructure
Michael Nixon	ASU East
Jerry Lilly	Trio Forest Products
John Kross	Town of Queen Creek
Glen Raper Jr.	Land Owner
Mike Smith	MCDOT Planning
Chris Plumb	MCDOT Planning
Sean Walters	Power Ranch
Peter Knudson	City of Mesa
Ron Krosting	City of Mesa
Kevin Wallace	City of Mesa
Lisa Davis	City of Mesa

INVITED BUT NOT IN ATTENDANCE:

Rick Allred	Town of Gilbert
Bruce Ward	Town of Gilbert
Jerry Swanson	Town of Gilbert
Dick Schaner	Town of Queen Creek
Tim Phillips	FCDMC
Bob Prince	UPRR
Frank Meisner	City of Mesa
Sandra Shade	Gila River Indian Community
Terry Isaacson	ASU East
Lynn Kusy	Williams Gateway Airport
Trish Shaffstall	Williams Gateway Airport
Power Enterprises	Land Owner
Richfield Investment Co.	Land Owner

MEETING DATE & LOCATION: AGRA Infrastructure Offices

SUBJECT: Pecos Road Alignment Study

SCOPING MEETING

Vaughn Bennett began the meeting by presenting the purpose and background of the Pecos Road Alignment Study. He then proceeded to outline the three conceptual alignments developed. Alignment 1 follows the existing Pecos Road section line alignment and terminates at Sossaman Road. Alignment 2 crosses the EMF channel nearly perpendicular and uses the existing railroad crossing location. Alignment 3 crosses the EMF channel nearly perpendicular and crosses Power Road at the mid-section line. Alignments 2 and 3 both terminated at the mid-section line between the Pecos Road and Germann Road section lines. Each of the alignments displayed also had two associated methods of terminating Rittenhouse Road. Those conceptual alignments that terminated Rittenhouse Road at Sossaman Road were given an additional "b" designation. The alignments evaluated therefore included 1a, 2a, 3a, 1b, 2b, and 3b.

After presenting the alignments, Ron Krosting questioned the mid-section line termination location at Sossaman Road. He stated that the City of Mesa had approved a quarter-section line location for Pecos Road between Sossaman and Ellsworth Road not a mid-section location. Dave Townsend responded by saying that the business group developing the parcels east of Sossaman Road has reached a consensus that the Pecos Road centerline is best located at the mid-section line. Ron replied that the business group would have to get approval to move the location of Pecos Road.

Concerns were raised by many regarding the new railroad crossings. Those representing MCDOT and the City of Mesa felt that the railroad would not allow for a new at-grade crossing. Vaughn stated that in his conversations with Bob Prince from UPRR, he had indicated that an at-grade crossing was possible. Consideration was given to the issues that might arise from constructing a bridge over the railroad. All seemed in agreement that if an at-grade crossing could not be granted, that Alignment 2 would be the best alternative because it uses an existing crossing.

Michael Nixon stated that ASU East has always favored an Alignment 1 layout for Pecos Road since it would provide access to a parking structure they have planned in the area. Ron Krosting stated that even if Pecos Road were to be located somewhere else that a small local road could be constructed to provide access to the parking structure.

Jerry Lilly said that he would favor either Alignment 2 or 3 because they provide the best access to the currently landlocked properties between Power Road and Sossaman Road.

Chris Plumb stated that the County would prefer Alignment 2 because it utilizes the existing railroad crossing and appears to be the least expensive.

Ron was concerned about the difficulty in signalizing Power Road if Alignment 1 were to be adopted because of the ¼ mile location of Alignment 1.

John Kross commented on the alignments shown for Rittenhouse Road. He stated that the Town of Queen Creek would favor an alignment that most closely follows the existing location of Rittenhouse Road in order to preserve the historic corridor. Having made that statement , he then said that all of the alternatives "a" would be unacceptable.

Sean Walters said that Power Ranch would favor Alignment 1 because it has the least impact to their development and that they have already laid out the development presuming a section line location. He said that they are using a section line alignment because that was the recommendation in the Gilbert Gateway Study. He stated that Alignment 2 could be made to work because some commercial and industrial parcels have been planned and could be located between Pecos Road and the railroad tracks. He said that Alignment 3 would be unacceptable because it divides the property too severely. He added that any right-of-way required for the construction of either Alignment 2 or 3 would have to be purchased and that they have no money available for the construction of the roadway itself.

A number of issues were raised which required responses or concurrence from the Town of Gilbert. It was concluded that an additional meeting would be necessary to resolve these issues with the Town. Those representing MCDOT, Mesa, Queen Creek, and ASU East all expressed in interest in attending the meeting.

AGRA
ENGINEERING GLOBAL SOLUTIONS

AGRA Infrastructure, Inc.
4435 E. Holmes Avenue
Mesa, Arizona 85206
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MEETING SUMMARY

DATE: August 17, 2000

TO: **MEETING ATTENDEES**:

Vaughn Bennett	AGRA Infrastructure
Elijah Williams	AGRA Infrastructure
Rick Allred	Town of Gilbert Engineering
Bruce Ward	Town of Gilbert Engineering
Mario Mangiamele	Town of Gilbert Planning
Chris Plumb	MCDOT Planning

MEETING DATE & LOCATION: August 17, 2000, Town of Gilbert Conference Room

SUBJECT: PECOS ROAD ALIGNMENT STUDY

The meeting began with Vaughn Bennett describing the project and the alignments developed so far.

Some immediate concerns were raised by Mario Mangiamele regarding the cost the Town of Gilbert would incur if either Alignment 2 or 3 were to be selected. He said that the expense would be approximately $20,000 for permitting and zoning changes. He also said that Power Ranch would incur about $20,000 – $25,000 in expenses for planning and architectural changes.

Rick Allred said that the City of Mesa would never build a section line alignment for Pecos Road because of all the existing conflicts (i.e. railroad, landfill, Gila River Indian Community, etc.). He then suggested that the Town of Gilbert look more closely at either Alignment 2 or 3 even though these alignments don't fit with the Town General Plan. Rick said that "politically speaking" he prefers alignment 2. He also added that even if he feels that Alignment 3 is the best engineering alternative, he believes that Power Ranch would never go for it. He was also concerned about getting new railroad crossings.

Bruce Ward didn't like Alignment 2 because it creates a 6-legged intersection with the railroad and falls on a ¼ mile point, which would be difficult to signalize. He did agree with Rick that Alignment 2 would be more politically feasible.

The meeting concluded with Rick stating that he would get in contact with the town manager and Mario saying that he would confer with Jerry Swanson – Town Planner.

Minutes of Meeting

Date/Time	January 4, 2001	**File no.**	01-1998-151
Location	AMEC Mesa Office	**Written by**	Elijah Williams
Subject	Pecos Rd TAC Mtg	**Signature**	

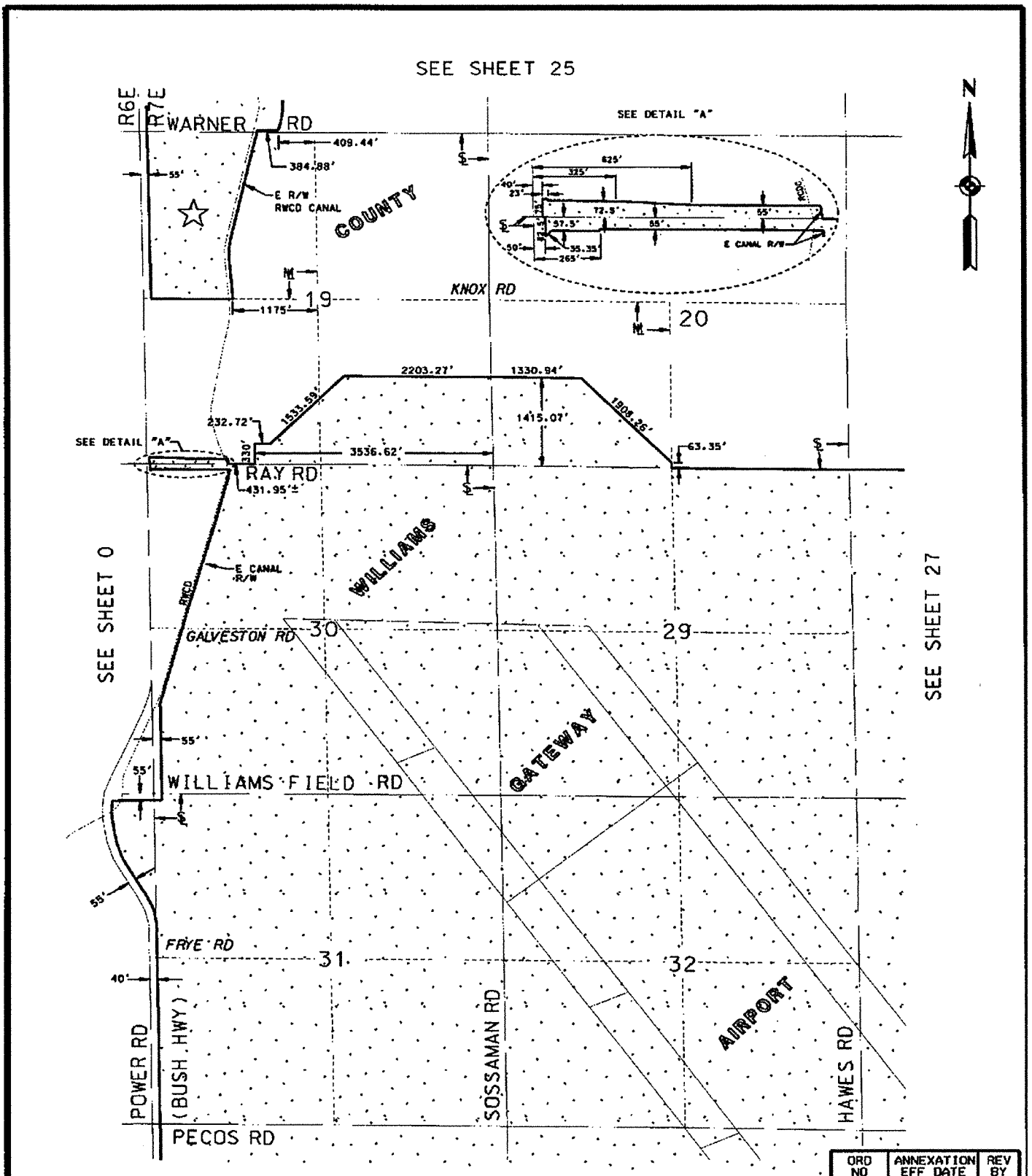
Present	Elijah Williams	AMEC
	Vaughn Bennett	AMEC
	Paul Basha	AMEC
	Dave Townsend	AMEC
	Steve Kellogg	Cornoyer-Hedrick
	Matt Seaman	Cornoyer-Hedrick
	Bruce Ward	Town of Gilbert
	Jerry Swanson	Town of Gilbert
	Sean Walters	Power Ranch
	Trish Shaffstall	WGA
	Dave DeWeese	MCDOT
	Mike Smith	MCDOT
	Glen Raper	Land Owner
	John Kross	Town of Queen Creek
	Jerry Lilly	Trio Forest
	Mitchell Foy	City of Mesa
	Peter Knudson	City of Mesa
	Mike Van Ruden	GRIC
	Don Lyon	Richfield Investment Co.

	Items	Action
1.	Vaughn began the meeting by presenting a summary of the report to the attendees.	None
2.	Bruce Ward stated that approval for the at-grade railroad crossing would have to come from Omaha not from Bob Prince. The consensus of those in attendance was that the crossing issue would have to be resolved before a true opinion of the options could be given.	Vaughn to Investigate a possible trip to Omaha.
3.	Mitch Foy said that the City of Mesa had reached a consensus that the Pecos Rd segment east of Power Rd should be 6-lanes and not four.	AMEC to revise the report accordingly.
4.	The John Kross said that the TOQC was still searching for a solution to the conflict between the TOG plans for Rittenhouse and their own.	None

AMEC Infrastructure, Inc.
4435 East Holmes Avenue
Mesa, Arizona 85206-3372
Tel (480) 830-3700
Fax (480) 830-3903

	ITEMS	ACTION
5.	Cornoyer-Hedrick stated that their preferred alignment is Alternative 3 but that they could agree to Alt 2.	None
6.	Don Lyon said that they would prefer Alternative 2 or 3.	None
7.	There was some discussion as to why Alt #1 was being thrown out so quickly. Jerry Swanson felt that the developers on the east side of Sossaman Rd were having to much say in the process. Elijah Williams Stated that Alt #1 was eliminated for other reasons than just the RR crossing.	
8.	The overall consencus of the municipalities was that if Alt #1 was feasible that it should be considered above the other alternatives. If Alt #1 is not feasible then Alt #2 would be the next choice.	AMEC to complete the report based on these findings.

APPENDIX D
CITY/TOWN LIMITS MAPS



ORD NO	ANNEXATION EFF DATE	REV BY
1907	2/6/85	KDD
2356	9/9/88	KDS
RESOLUTION 2356	2/6/89	KDS
2473	1/18/90	KDS
3711	12/15/99	DKG
3762	5/17/00	DKG

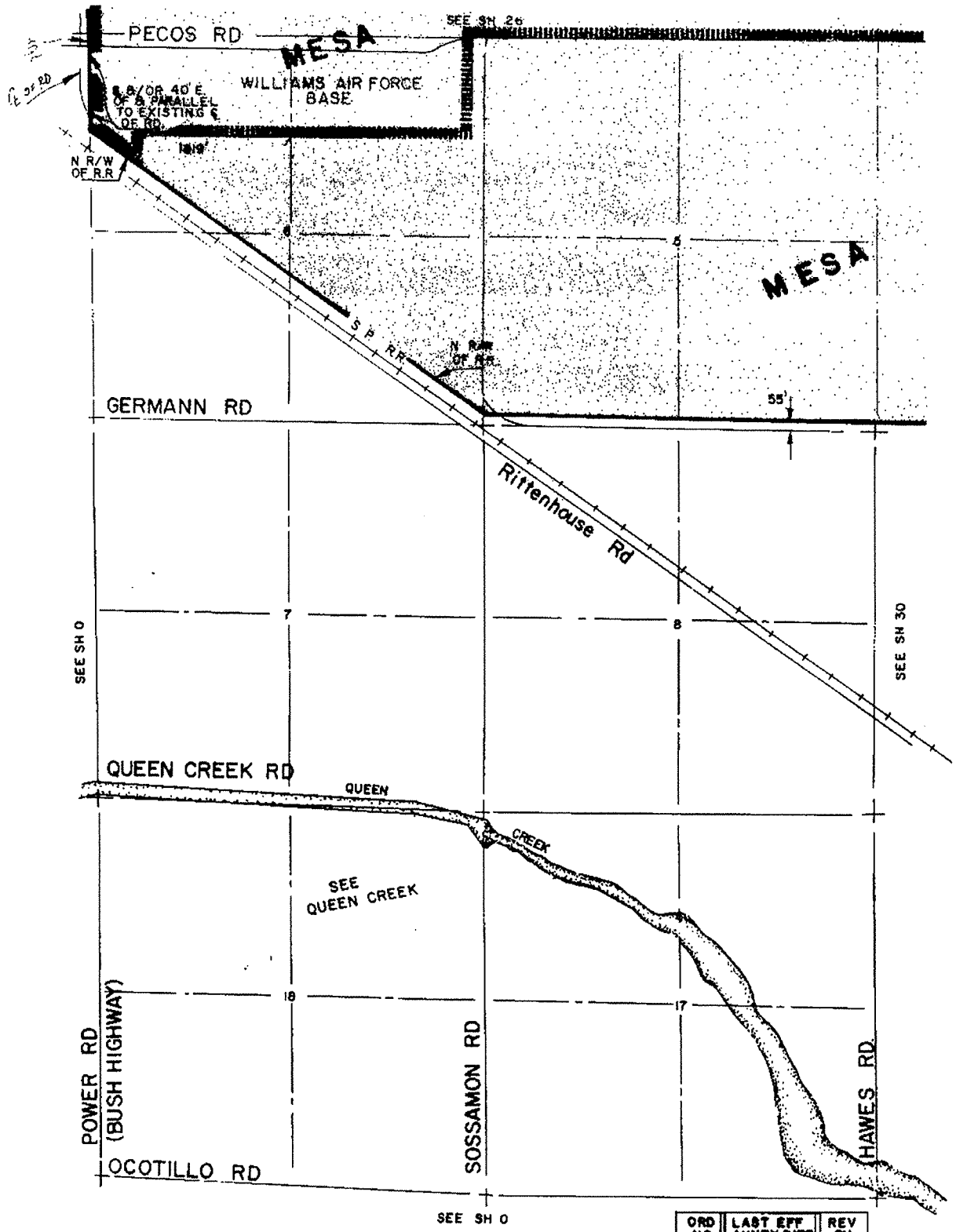
THIS CITY LIMIT SHEET IS TO BE USED AS A GUIDE ONLY! MARICOPA COUNTY WILL NOT BE RESPONSIBLE FOR ERRORS OR OMISSIONS THAT MIGHT OCCUR.

· INCORPORATED AREA

MESA

T1S- R7E

26



MESA
T 2S-R 7E

29

N

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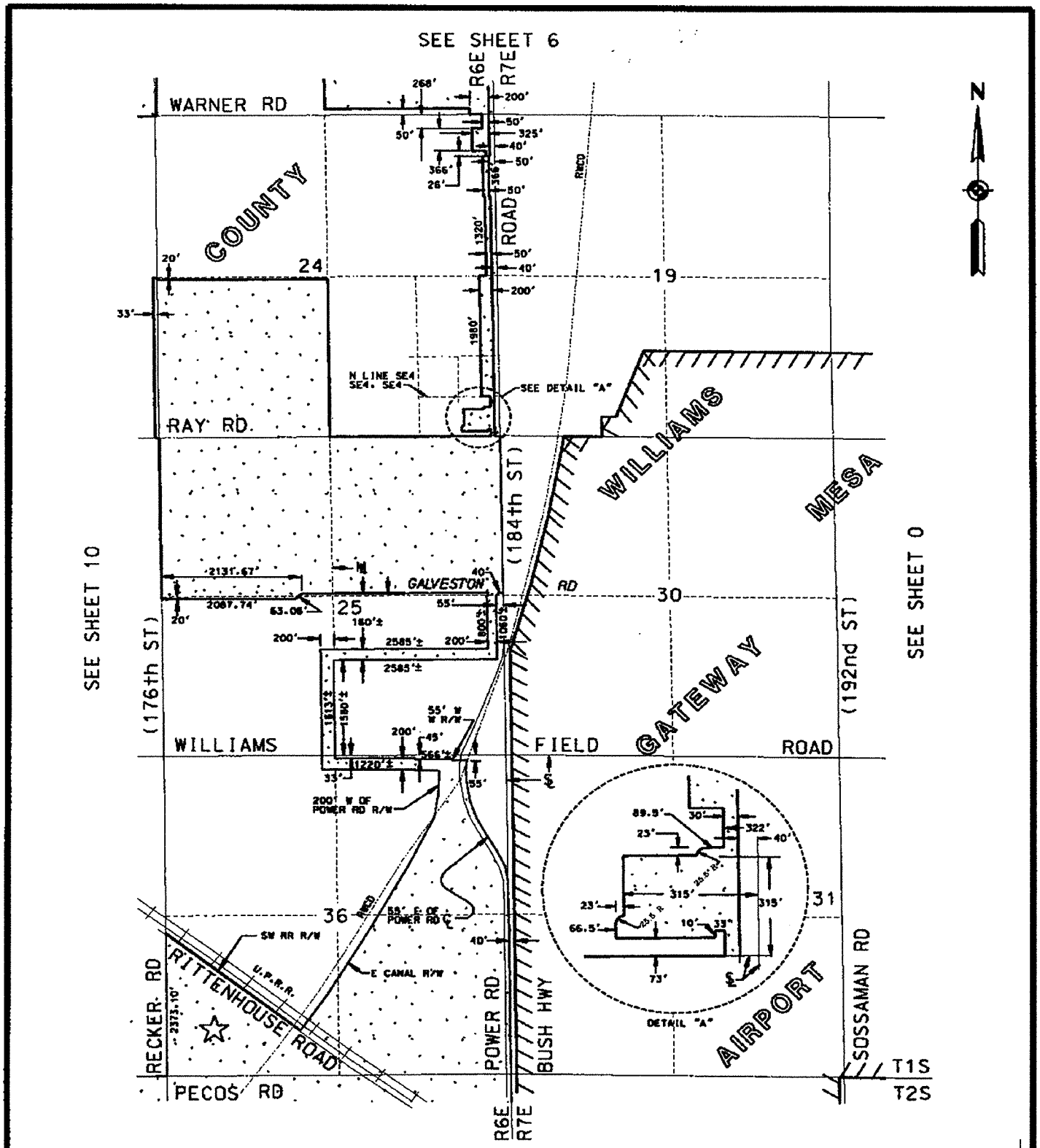
ORD NO	LAST EFF ANNEX DATE	REV BY
RESOLUTION 2551	2-6-89	KDS
2473	1-18-90	



T1S- R6E T1S- R7E

GILBERT

ORD NO	ANNEXATION EFF DATE	REV BY
1152	4/2/99	DKG
1154	4/2/99	DKG
1237	1/7/00	DKG
1252	3/29/00	DKG
1260	5/11/00	DKG

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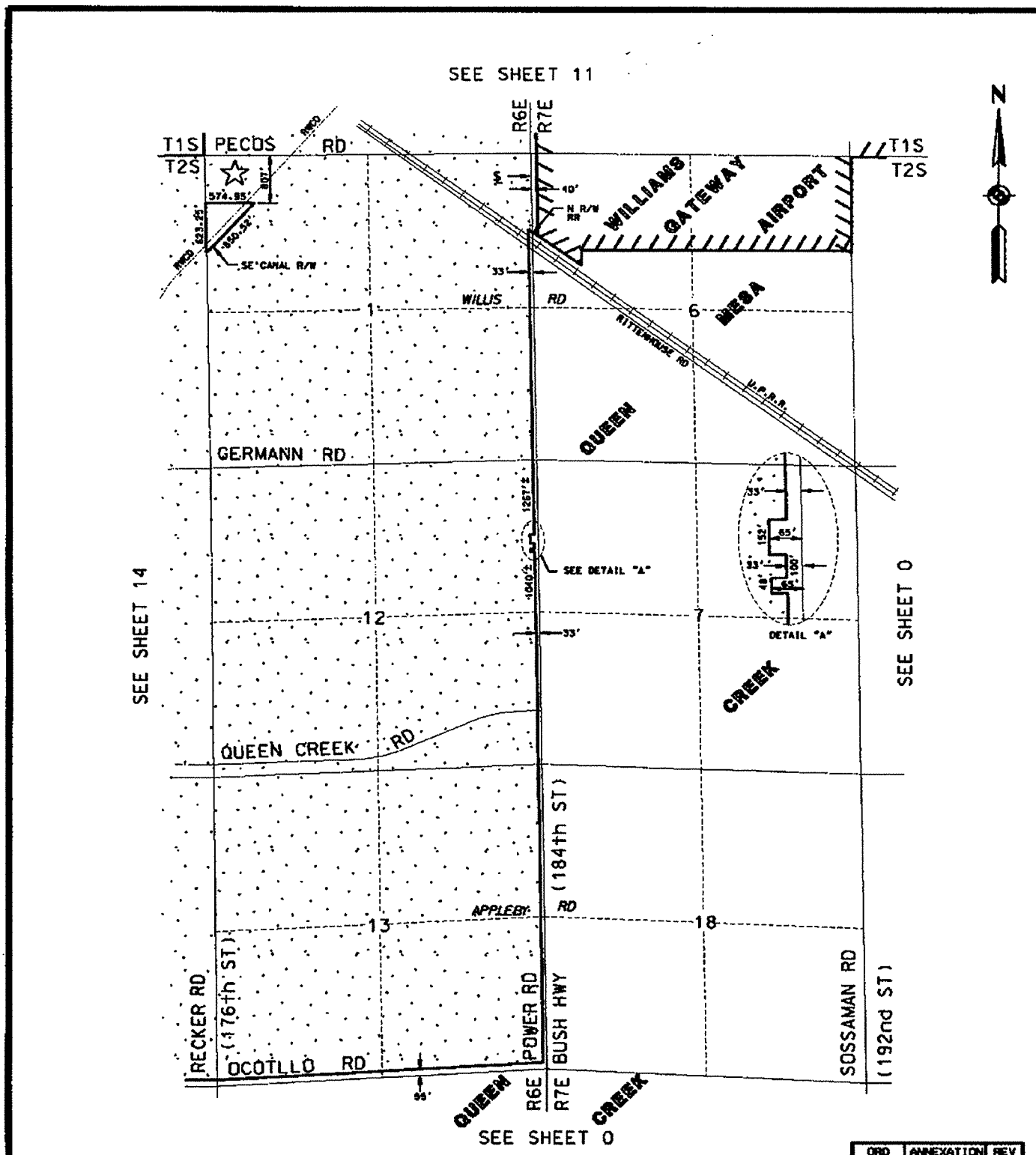
• INCORPORATED AREA



ORD NO	ANNEXATION EFF DATE	REV BY
1260	5/11/00	DKG

T2S- R6E
T2S- R7E
GILBERT

15

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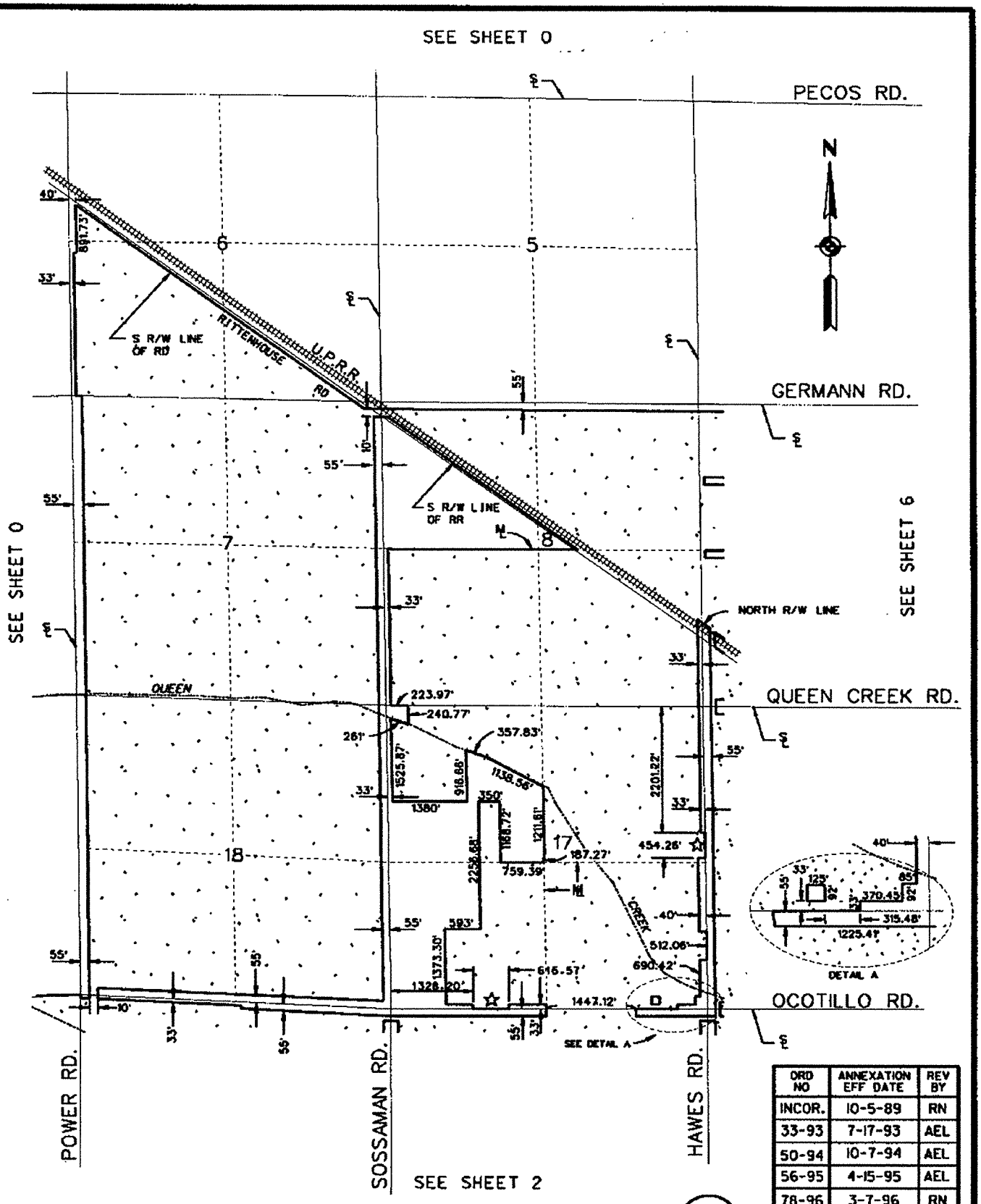
= INCORPORATED AREA



ORD NO	ANNEXATION EFF DATE	REV BY
INCOR.	10-5-89	RN
33-93	7-17-93	AEL
50-94	10-7-94	AEL
56-95	4-15-95	AEL
78-96	3-7-96	RN
189-99	9-4-99	DKG
213-99	12/17/99	DKG

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= Incorporated Area

T2S- R7E

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QUEEN CREEK